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A LANDMARK IN MODERN NEUROLOGY*

BY WILFRED TROTTER, M.S., F.R.S.
SURGEON, UNIVERSITY COLLEGE HOSPITAL

I

THERE is perhaps no custom which we accept as a matter of course more readily than the ceremonial commemoration of past events. The facility with which exercises of this kind are set going indeed suggests the suspicion that they are animated by motives both numerous and mixed; and we may well remember in confirmation the strange and even scandalous allegations of psychology about the things that lie behind our most ordinary conduct. Happily it is neither my task nor my wish to touch on such obscurities, or to try to sound the molten subterraneous magma on which the continents of virtuous behaviour so blandly float. Even the suspicion however, that motives may not always be as they seem, lays upon us the duty to define quite clearly what we propose should be our attitude of mind in approaching an occasion such as this. If we succeed we shall moreover obtain the secondary advantage of some security against the lapses of proportion and of emphasis, which the spirit of celebration may be a little inclined to indulge.

I yield to the temptation that besets the maker of definitions, and begin with some of the elements the commemorative impulse should control or reject. In the first place we do well to deny ourselves any strong tincture of that antiquarian spirit which delights to note in the doings of our forebears, the qualities of the merely old-world and quaint. In the second place we shall do well to use a reasonable proportion and measure on our laudation of departed greatness. The pious exercise of praising famous men is no doubt a highly respectable if rather sedentary occupation. I would not be supposed to deprecate it, but I venture the reminders that praise in its higher flights is apt to get at odds with understanding and that even the truthful Samuel Johnson did not require a man to be on his oath in an epitaph. These reserves are no longer necessary when we direct our commemorative zeal towards the pursuit of reality. The vividness and the immediacy of contemporary events are apt to conceal from us how little of their full quality and outline we are able to discern. It is only the past event that can be seen as part of the pattern of things and with an approach to substantial reality. On an occasion such as this, then, we shall best serve our object if we take advantage of the distance of the event, to examine it in its general relations and the light of its secular context, and throughout in the spirit of a strict realism.

II

We are to recall a surgical operation that was done at the Hospital for Epilepsy and Paralysis on the 25th of November 1884—fifty years ago and well within the reach of living memory. The insidious action of memory must not however be allowed to obscure the fact that in going back to that time it leaps a gulf between us and another age. We shall not get a proportioned view of our event unless we pause a moment to call up the world in which it took place. In 1884 we find ourselves in the richest depths of the Victorian era, and the warm tranquil air of its impenetrable security closes round us. The stability and permanence of the scene are embodied in the everlastingness of the three world-figures which dominate it—Queen Victoria, Gladstone, Bismarck—figures which seemed so extravagantly different then but which disclose a certain similarity to-day. An ultimate and real security enclosed the body and spirit. The land belonged to its monarchs, the seas belonged to England, and the firmament was unconquered though perhaps still a little vaguely claimed by the Church. In science the air was as yet unadulterated with inert gases, and matter still sat contentedly in its little hard globular and indestructible atoms. The British Empire was still without self-consciousness and without a voice, though a couple of years later it was to find both as the whole epoch swung to its zenith in the Jubilee of 1887. Ten years still further on the Jubilee of 1897 would find the voice of Empire already a little strident and uneasy, the light perceptibly that of evening and the shadows lying long on the ground. But the golden decade of the eighties seems in memory bathed in the timeless light of summer afternoons into whose tranquility no storm could conceivably break.

This is not to say that there were no occasional rumblings on the horizon which seemed to indicate that someday the weather might change. While the group of doctors to whose doings we are presently to come had done their operation, and were watching their patient with declining hopes through anxious weeks, General Gordon hopelessly shut up in Khartoum, was watching the approach of a doom as inevitable as that of the sick man, whom he was only just to outlive.

III

So much for the general context in which the event we are to celebrate had its course. Its special context will concern us more when we have recalled the event itself. The story of the case has been re-told quite lately by Sir D'Arcy Power in the vivid way we all know, and I therefore need provide no more than a curt summary of the facts in the modern rather than the contemporary idiom. The patient was a man of 25 with no other evidence of abnormality than his cerebral symptoms. For three years he had shewn slowly progressive evidence of a lesion in or near the central cortex of the right hemisphere. The succession of symptoms shewed typical Jacksonian attacks with occasional loss of consciousness. The limited attacks were first in the left side of the face and tongue and then in the left hand and arm. For about six months there had been weakness of the left arm and for three months before the time of admission to the hospital on November 3rd the patient had had to give up work because the left arm was useless. From the time of admission there had been slight weakness of the left leg, and severe pressure symptoms had set in, namely intense paroxysmal headache and vomiting, and well-marked papilloedema with hæmorrhages. The diagnosis was made of a tumour "probably of limited size involving the cortex of the brain and situated at the middle part of the fissure of Rolando." This conclusion was put before the patient who was intelligent enough to understand, and brave enough to accept the course proposed by the doctors. On November 25th the tumour was

* An address delivered at the house of the Royal Society of Medicine on Nov. 27th in commemoration of Sir Rickman Godlee's pioneer operation performed at the Hospital for Epilepsy and Paralysis on Nov. 25th, 1884.

found and removed by operation through an opening immediately over and but little larger than the tumour itself. Only one cerebral convolution was exposed—the ascending parietal as was afterwards proved—it was slightly yellow and relatively avascular. When it was incised a tumour was disclosed at the depth of ¼ inch. This shewed an apparent encapsulation but was enucleated piecemeal and subsequently described as a glioma.

The immediate effect of the operation was wholly satisfactory. There was a slight increase of the hemiplegic weakness but all the other symptoms were relieved and the intelligence was fully retained. It had been proved for the first time that without the least external abnormality of the skull to point the way, a focal lesion of the brain substance could be found and could be removed by operation leaving the general functions of the brain unimpaired.

Complete success, success such as would have been palpable even to the "world's coarse thumb and finger," was denied these valiant men. A slow infection of the wound occurred and after four miserable weeks of disappointed hopes, the patient died of meningitis. It would be beyond the limits of my task to comment on this operation from the point of view of the modern surgery of the brain of which it is one of the corner stones. The remark may however be made that if these pioneers were unfortunate in their efforts to exclude infection, they were fortunate in having as their first case one in which the neurological and anatomical localisation of the lesion could be made so brilliantly exact.

IV

There were present among others at the operation, Hughes Bennett and Godlee the physician and surgeon directly concerned, and Ferrier and Hughlings Jackson without whose work it would never have been thought of. I do not propose at the moment to say anything more of the two last named. Of Alexander Hughes Bennett I will limit myself to saying that he seems to have been the competent and respectable son of a distinguished father, John Hughes Bennett of Edinburgh. The elder Hughes Bennett, as I cheerfully discard relevance to remind you, introduced the use of cod liver oil to this country, and tried to persuade the profession to cure rickets 80 years before the discovery of vitamin D. He met with even less success than did James Lind who tried to persuade the profession to prevent scurvy 150 years before the discovery of vitamin C.

Of Rickman John Godlee the occasion seems to demand an ampler memorial and personal knowledge perhaps to justify the attempt. At the time of the operation we have described, he was in his early prime and had been on the staff of University College Hospital for seven years. He was to serve the Hospital for 30 years more with a characteristically punctual assiduity, and a loyalty and judgment that made him one of its mainstays. It is the healthy tradition of the students of that Institution to view their seniors with an unsentimental and not too indulgent eye. I cannot express respect for the memory of Godlee better than by saying that all the influence of his early training and mature judgment, would have approved the attempt to recall him under the guidance of that traditional method, and to see him as he was. He certainly saw us as we were and did not always conceal the result of his observations. His precise patient and extraordinarily lucid teaching was invaluable, not only for its excellence but also for the conscientious regularity with which it was dispensed, even in his busiest years. He was never harsh but his confidence was difficult to win, and he was an exacting chief who enforced his instructions with a chilly mildness that had its power. I can speak only for one of his pupils, but it took that one a long time to guess at the sensitiveness and personal humility, which he defended from the world with a tongue always clever and sometimes a little cruel.

It is scarcely possible to estimate the quality of Godlee as a surgeon without some glance at the men who were his nearest contemporaries on the staff at University College—Arthur Barker his senior by one year, and Horsley his junior by seven years.† Each of these two men had the restless curiosity and discontent of the pioneer, each had a strong natural aptitude for operative work, and each in his own field was capable of the highest flights of technical virtuosity. It was natural therefore that their interests should tend to be concentrated on special problems, while the rest of surgery was taken very much for granted as common knowledge, though Horsley in particular when he chose to use it had an extraordinary flair for all clinical matters. Godlee on the other hand was a true and single-minded clinician, for whom the task of the surgeon was to teach and to practise the established doctrines and rules of the art. His attitude to surgery was therefore in the best sense academic and authoritarian, and his work, well controlled by caution and scepticism, had the distinction conferred by a capacious and instructed mind.

It may well seem rather paradoxical that we find a man of this type, engaged in the daring adventure that an attack on a cerebral tumour must then have seemed, and I have no doubt that Godlee approached it with at least all the qualms that any conscientious surgeon must have felt. He would be sustained however by the knowledge that he possessed two very special qualifications. In the first place as the nephew of Lister he could feel able to apply the new antiseptic doctrine in all its purity and might also feel an almost apostolic mission to demonstrate its value in the unknown region of the brain. In the second place the knowledge that he was a highly competent anatomist must have encouraged him to undertake the difficult task of finding his way to a given convolution guided only by anatomical measurements. It is pleasant to think with what relief and pride the young, conscientious and perhaps not very self-confident surgeon, must have concluded an operation that had so brilliantly justified every expectation, and so generously rewarded every effort.

No such happy concatenation of circumstances seems to have befallen Godlee again, and throughout his long and extremely distinguished career whatever satisfactions and triumphs he was to enjoy, he was not to experience any more just that special exultation of leading the forlorn hope.

V

In mentioning those who were present on this historic occasion I have said nothing about someone else whose presence even the least sentimental of us must admit to have been indispensable. One's professional mind, perhaps wisely, would prefer to conceal under the comprehensive label of "the case," the fact

† This group of remarkable men must always be further linked in the memory of the surgical neurologist by the facts that in 1886 Barker was the first in this country to drain successfully an otitic cerebral abscess, and that in 1887 Horsley was the first to remove an accurately localised spinal tumour. The latter achievement was perhaps the least known but not the least substantial contribution to the celebrity of the year that marked the Jubilee of the Queen by whose express wish Horsley had received his first name.

that this person was a human being, and would also prefer to limit any concession of individuality to such remarks as that he was of a good type and that he took the anæsthetic well. With an equally prudent preference for the abstract, the general speaks of his men as "the troops," and recognises in them such distant approaches to humanity as that they are smart on parade, or steady under fire.

The heresy of admitting that at the centre of this event there was a human being is possibly condoned by his short appearance before us not being without a certain tragic dignity. He was young, intelligent, courageous and he was to die. I owe to the impeccable memory of a contemporary witness the knowledge that this young man's name was Henderson and that he was a native of Dumfries. I record this with pious satisfaction in being able to add a name to the exiguous roll of those by whose misfortune or endurance the world has directly gained. It is a strange defect in medical history to have kept so few of the names of these benefactors and to have left it to accident that we still know there existed such humble but significant people as little James Phipps and Sarah Nelmes or Alexis St. Martin. To the high professional spirit treasuring such names may seem trivial and even a little ludicrous. Let us not forget however that they are the names of those who have borne more substantial witness than has yet been produced by any philosopher or any theologian that all suffering is not in vain.

VI

We have tried so far to make some sort of picture of our event in three ways. First we have touched on the general environment in which it took place, secondly we have enumerated some of the happenings of which it was made up, and thirdly we have given some attention to the actors who took part in it. It remains to add to the bare outlines of our necessarily imperfect specification some comment on the significance, or what I have called the special context, of the event itself. The first operative removal of a localised cerebral tumour was what we may call a nodal occurrence that marked the convergence of two distinct processes, the evolution of operative surgery on the one hand and of neurology on the other.

The development of the remedial use of the knife seems always to have occurred in two stages. In the first, discovery was made that a procedure was anatomically and physiologically feasible and it was applied to what pathological conditions might be hoped to be benefited by it. The essential fact was that the operation could be done at all, and not that it was designed to deal with a given lesion. Thus may have originated most of the classical formal operations—the amputations, the excisions of the tongue and of the jaws which were in essence anatomically conditioned, and without primary orientation towards any disease.

When the anatomical and physiological obstacles to the art have been overcome, and are no longer the surgeon's chief care, it is possible for operations to be orientated specifically towards dealing with a given lesion, and to be designed chiefly in accordance with pathological considerations. Thus we no longer amputate the tongue or excise the jaw or larynx for cancer, we excise the cancer from these regions. Hence the full development of the operative surgery of a part is strictly dependent on its pathology. Though always growing in accordance with this simple principle, the evolution of surgery as a whole was checked and at last almost arrested by the inability to prevent wound infection. In the pre-Listerian ages wound infections were scarcely serious enough to be in themselves a drag on the progress of surgery, so long as the population was thin and scattered. Increase of population and of urbanisation went on with progressive rapidity throughout the 18th and 19th centuries, making unavoidable the aggregation of the sick in hospitals. The inevitable result was that by the middle of the latter period, it began to seem doubtful if wound infections would not bring hospital surgery, and with it surgical progress, to a stand-still. The result was a highly anomalous situation, in which surgical pathology had got far ahead of surgical treatment. Many conditions were well enough understood pathologically for their treatment to be clear; the anatomical and physiological obstacles to the necessary operation were understood and surmountable; but treatment was impossibly dangerous through the irrelevant factor of wound infections. The Listerian system quickly abolished this anomaly, and there was an immediate harvest of success in conditions of which the pathology was at all reasonably advanced. Where however surgical pathology had been able to make little or no substantial progress, then the antiseptic method could gain no immediate results. Progress therefore resumed its normal type though it was doubtless accelerated by the increased freedom to explore and observe that the surgeon now possessed. Thus though Wölfler did the first gastroenterostomy in 1881 and Koch discovered the tubercle bacillus in 1882, it was near the end of the century before abdominal surgery had fairly assumed its modern aspect, and after the turn of the century before the modern surgery of the thorax began to take form.

The tedium of this digression is justified here, if at all, by the salience it may give to the unique evolution the surgery of the brain has had. It was the good fortune of this branch of the art that at approximately the time when the antiseptic method enlarged, if not indeed created its opportunities, really fundamental discoveries in the physiology and pathology of the brain were being made, so that there was no tendency for operative inventiveness to outrun its pathological foundations. Progress has been slow through the comparative rarity of its material and the stubborn difficulty that is its everyday characteristic. That slow progress has however been steady, and unproductive of the kind of operation, known sometimes in other branches, that flourishes exceedingly and then dies because it has no sound pathological basis.

VII

I have referred to the fundamental discoveries in neurology that did so much to start the surgery of the brain on its course. They will for ever be associated with the work of two men whom we have noted to be present at Godlee's operation—Ferrier and Hughlings Jackson. With some slight reference to that work my task draws to its end.

Whenever we may suppose the idea of a localisation of function in the cerebral cortex to have originated, it began to get systematic exploitation with Broca's discovery, in 1861, of a relation between aphasia and lesions of the third left frontal convolution. From that time research followed the two lines of clinical enquiry and animal experimentation. In the clinical field Jackson soon established the position of a master and within a few years had begun the long series of contributions which are among the most precious classics of neurology. The experimental attack began with Fritsch and Hitzig in 1870, who demonstrated the electrical excitability of the anterior part of the

cerebrum. Then Ferrier took up the task and in 1873 published a long and detailed paper which carried the subject much further forward and confirmed in a remarkable way the clinical work of Jackson. The impetus given to the subject by Ferrier was very great, and it was pursued with increasing minuteness and exactitude by physiologist after physiologist. At the time of Godlee's operation, for example, Horsley had already been engaged for nearly a year with Sharpey Schafer at University College on their well-known work on the monkey's brain. These bare references are enough to recall the atmosphere of vigorous neurological expansion of the period with which we are concerned. In some ways also they perhaps make it seem more remote. I cannot deny myself a reminder that tends against this last impression. Ferrier's classical paper was published in the Medical Report of the West Riding Lunatic Asylum for 1873. I almost feel I should digress to apologise for the crudeness of the name which the then backward state of psychiatry allowed this institution to possess; I wish I could have called it a Mental Hospital, though perhaps the experimental physiology would not have been any better. In this paper, then, Ferrier expresses his thanks to the Medical Director for putting at his disposal the liberal resources of the laboratory in which he had done his work. Sixty-one years later I find myself able in one thing to follow in the footsteps of Ferrier, and that is in expressing my thanks (for help in recording the event we commemorate to-day) to the same distinguished physician Sir James Crichton Browne.‡

We have been engaged in recalling one of the victories of the human spirit over chaos. As we take leave of the battlefield we may note that like other famous victories its results have not altogether been the expected. It was fought in the strength of three great principles—the antiseptic system with all its chemical lotions and its sprays, the precise projection of the cerebral markings on the surface of the skull as a preliminary to operation, and the doctrine of the exact localisation of cortical function. The first two have long been abandoned by the surgeon and I should be sorry to have to define the present position of the third. Nevertheless each has left a substantial legacy of which the invigorating influence in surgical neurology remains perennial. Thus though we might hesitate to fight a similar battle to-day under the guidance of these time-worn champions, we can yet believe that the event they directed was a real event, and one worthy of our respectful commemoration.

‡ Sir James Crichton Browne has been good enough to inform me that though not actually present at Godlee's operation he was acquainted with the case both before and after and was well qualified through his familiarity with the patient's native place to test his memory after the operation. Sir James was the author of the well-known letter in "The Times" signed "F.R.S." which pointed out the direct dependence of the operation on the results of animal experiment, and which led to some controversy and also to two valuable leading articles in that journal.

SITE FOR BLOCK OF PAYING BEDS.—A site has been secured for the erection of a block of paying beds for the Nottingham General Hospital through the gift of £25,000 from Mr. J. D. Player. His gift is conditional upon the hospital raising by subscription the balance required.

NEW HOSPITAL AT EAST GRINSTEAD.—The building of this hospital, which will contain 12 beds for male, 12 beds for female patients, 6 cots for children and 6 pay beds, has now been started. It is to cost over £23,000, and it is hoped that it may be opened next October. A balance of £6339 has still to be raised if the hospital is to start clear of debt.

ONE HUNDRED HISTAMINE TEST-MEALS ON NORMAL STUDENTS

BY F. P. LEE LANDER, M.D., M.R.C.P.Lond.
MEDICAL REGISTRAR, MIDDLESEX HOSPITAL; AND
N. F. MACLAGAN, M.Sc., M.B., M.R.C.P.Lond.
WHOLE-TIME WORKER FOR THE MEDICAL RESEARCH COUNCIL

(*From the Department of Physiology and the Courtauld Institute of Biochemistry, the Middlesex Hospital*)

A GREAT deal has been written in recent years on the use of histamine stimulation for the study of gastric secretion, and no arguments need be given here for the advantages of this method of obtaining gastric juice over the older forms of test-meals. Whilst much is now known about the results of this test in pernicious anæmia, fevers, peptic ulcer, pregnancy, and various other states, no investigation has as yet been carried out on a large series of normal subjects. The nearest approach to such a work has been Polland's analysis of 988 cases, many of which were found to be free from any lesion of the gastro-intestinal canal or "significant disease." The objection to taking Polland's series as a criterion of the normal is that the subjects all presented themselves at a hospital for some complaint, no matter how trivial, and in the present state of our knowledge we are unable to say what conditions influence gastric secretion.

Medical students were chosen as the subjects of the present investigation because they formed the largest body of healthy adults to which we had access and also because they were likely to fall within a fairly close age limit.

The ages of the subjects varied between 18 and 28 years except for three subjects who were 32 years old. A total of 108 students were subjected to the test, and of these 8 gave a history of abdominal pain. Several of them had been radiographed and no lesion of the stomach or duodenum had been found; but these 8 cases will be considered separately. Careful histories were taken in each case, especial note being taken of past history of gastro-intestinal disturbance and of abdominal operations. The family histories were investigated in each case and note made of the occurrence of indigestion or peptic ulcerations in the families.

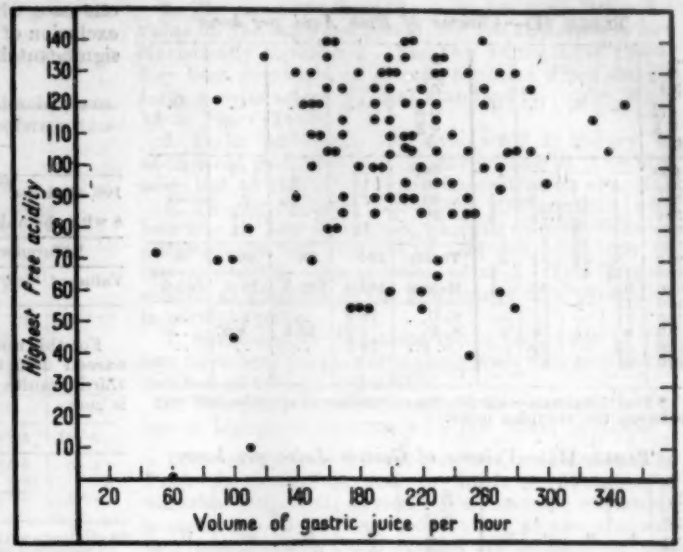
METHOD OF INVESTIGATION

The technique was similar to that of Bloomfield and Polland,[1] but certain points were altered as a matter of convenience.

The time of test was either 9 A.M. or 2 P.M., in the latter case a light breakfast being allowed at 8 A.M. A Ryle's tube was passed, the resting juice was removed, and the stomach then washed with several syringefuls of warm water until the rinsing fluid was returned clear. We feel that this is desirable, not only as lavage, but also to ensure that the tube rests in the most dependent part of the stomach. The blood pressure was taken as a routine, and if the systolic blood pressure was below 110 the usual dose of 0·75 mg. of histamine hypodermically was reduced to 0·5 mg. (8 cases). The average weight of 87 of the students was 66·0 kg., so that this dosage corresponds fairly closely to that recommended by Bloomfield and Polland (0·1 mg. per 10 kg.). In view of the relatively slight differences found by Englebach and Brown[2] between the effects of 0·75 and 0·5 mg. any small difference in dosage is probably unimportant. The eight cases who had 0·5 mg. covered a wide range of acidity, and did not differ significantly from the whole series.

The stomach was then emptied as completely as possible every ten minutes, a stop-watch or a large ordinary watch

being used for timing. About the last three minutes of each period were devoted to aspiration. Although as a rule no difficulty was experienced with this, it is a procedure which requires some practice, and occasionally it became obvious that complete emptying had not been obtained; for example, if successive specimens consisted of 5 and 50 c.cm. A special effort was made to ensure emptying at 10 and 50 minutes, and the juice secreted during this period was taken as an index of the volume instead of the highest ten-minute volume recommended by Bloomfield and Polland. In this way errors of volume estimation are reduced to one quarter. We prefer this procedure to that of Comfort and Osterberg,[4] who use the volume from 0–30 minutes, for two reasons. Firstly, it is easier to devote complete attention to emptying at 10 minutes, and, secondly, it often happens that the acidity or the volume is greater during the period from 40–50 minutes than at any other time. The period from 10–50 minutes covers the maximum volume and the maximum acidity in all our cases.



The following characteristics of each test have been tabulated :—

(1) Highest free acidity reached. Titration with Toepfer's reagent; result expressed as c.cm. N/10 acid per cent.

(2) Highest total acidity reached. Titration with phenolphthalein (for comparison with Polland's figures).

(3) Volume of juice secreted per hour (in c.cm.). This is obtained by multiplying the volume from 10–50 minutes by 1·5.

(4) Volume of free acid secreted per hour (c.cm. N/10 acid). This is calculated by adding together the volume of acid secreted during each 10-minute period from 10–50 minutes and multiplying the result by 1·5. The volume of acid is of course the volume of juice multiplied by the concentration of acid.

In a number of cases determinations were made of the pepsin and total chlorides which are to be reported separately.

It is not in general necessary to tabulate both free and total acid since they differ constantly by about 10 units in normal persons. The use of the free acid has the advantage that cases of achlorhydria are clearly indicated. The volumes and acidity usually increase up to 30 or 40 minute period and then decrease, but the maximum may occur at any time from 10–50 minutes. We were not able to repeat the test upon all cases in which the juice was bile-stained, as recommended by Bloomfield and Polland, but in one case where this was done no noticeable difference was seen on the second occasion. In general it appeared probable from the course of the acidity that regurgitation did not have much neutralising effect even when the specimens were bile-stained.

The presence of blood in traces just visible to the naked eye was a frequent finding, especially in the later specimens. Otherwise the juice was usually water-clear.

There was very little correlation between the volumes of juice and the concentration of acid (see Figure) except in three subjects with the highest volumes and the one subject with achlorhydria.

No severe discomfort was produced by the histamine in the dosage which we employed. About a quarter of the subjects had headache, either at the time of the test or later, but not of great severity. One individual with low blood pressure (100/75) experienced faintness and giddiness for two or three minutes after the injection. Nearly all the subjects who had previously had a gruel fractional test-meal declared their preference for the histamine test.

RESULTS

The results are given in Tables I. to VI. Attention may be directed to the following points :—

The distribution of *highest free acidity* is such that all values from 0 to 140 c.cm. N/10 acid per cent. can occur in normal persons. The distribution is obviously skew, values above the mean occurring more frequently than those below. The single case of achlorhydria, on whom the test was repeated three times, gave no history of digestive disturbance beyond occasional flatulence, and was in good health.

TABLE I.—*Highest Free Acidity*

A. = 100 normals. B. = 20 with dyspeptic parents. C. = 80 without dyspeptic parents. D. = 8 additional subjects with a history of abdominal pain. S. D. = Standard deviation. S. E. = Standard error. Co. v. = Coefficient of variation.

C.cm. N/10 acid %.	A.	B.	C.	D.	C.cm. N/10 acid %.	A.	B.	C.	D.
140	5	1	4	0	60	2	—	2	1
135	5	0	5	1	55	5	—	5	—
130	10	2	8	1	50	—	—	—	—
125	7	4	3	0	45	1	—	1	—
120	8	3	5	2	40	1	—	1	—
115	4	2	2	1	10	1	—	1	—
110	8	1	7	0	0	1	—	1	—
105	10	2	8	0					
100	6	1	5	1	Totals	100	20	80	8
95	4	1	3	1					
90	7	—	7	—	Means	101·6	111·7	99·1	109·4
85	5	—	5	—					
80	4	—	4	—	S. D.	28·3	..	..	..
75	—	—	—	—	S. E.	2·83	6·33	3·16	..
70	5	2	3	—	Co. v.	27·9	..	..	..
65	1	1	—	—					

The *volume of juice per hour* and the *volume of acid per hour* are symmetrically distributed about means in the neighbourhood of 200 c.cm. The volume of acid shows a rather greater variability. This symmetry is an advantage from the point of view of statistical treatment.

TABLE II.—*Volume of Free Acid per hour*

C.cm. N/10 acid %.	A.	B.	C.	D.	C.cm. N/10 acid	A.	B.	C.	D.
460	—	—	—	1	80	5½	—	5½	—
340	½*	½	—	—	60	1½	½	1	—
320	1½	1	2½	½	40	2½	½	2	—
300	3½	1	2½	½	20	½	—	½	—
280	8½	3½	5	1	0	1½	—	1½	—
260	5½	3½	2	1					
240	6	2½	3½	1	Totals	100	20	80	8
220	11½	4	7½	½					
200	9½	—	9½	½	Means	182·3	229·5	170·5	255·0
180	11	—	11	—					
160	11	—	11	—	S. D. .	72·2	..	..	..
140	9	1½	7½	2	S. E.	7·22	16·1	8·07	..
120	5½	1	4½	—	Co. v..	39·6	..	..	..
100	5½	½	5	—					

* Fractional values signify the occurrence of acidities half-way between the grouping units.

TABLE III.—*Volume of Gastric Juice per hour*

C.cm. N/10 acid %.	A.	B.	C.	D.	C.cm. N/10 acid %.	A.	B.	C.	D.
380	—	—	—	½	120	2	—	2	—
360	—	—	—	1	100	4	—	4	—
340	1½	½	1	½	80	2	1	1	—
320	1½	½	1	—	60	1	—	1	—
300	1	1	—	1	40	—	—	—	—
280	5	3	2	½					
260	8	2½	5½	1	Totals	100	20	80	8
240	9	1½	7½	1					
220	16½	5½	11	½	Means	199·6	230·5	191·9	267·5
200	18½	3	15½	½					
180	9½	½	9	½	S. D.	54·3	..	..	..
160	14	½	13½	—	S. E.	5·43	12·1	6·07	..
140	6½	½	6	—	Co. v..	27·2	..	..	..

TABLE IV

Three students who exhibited achlorhydria with a previous gruel fractional test-meal.

No.	Highest free acidity.	Free acid per hour.	Gastric juice per hour.
1	120	90	90
2	70	70	100
3	85	200	250

These results on 100 normal students may now be compared with Polland's figures and with those of three sub-groups.

The mean total acidity is higher than Polland's value for a similar age-period (20–29), but the difference (9·9±5·09) is just within the limits of sampling errors (Table V.).

TABLE V A.—*Statistical Analysis of Differences*

—	Mean total acidity.	Standard error.
100 normal students ..	111·0	2·77
Polland's 70 cases	101·1	4·27
Difference	9·9	5·09

The difference does not exceed twice its standard error and is therefore not significant.

The eight students with a history of abdominal pain (Table V.B) show no difference in the highest free acid, but a definite increase in the volume of juice and the volume of acid. Most of this is however due to one case with an exceptional output of acid, and the exclusion of this leaves the volume of juice as the only significant difference.

TABLE V B

—	Mean highest free acid.	Mean vol. acid per hour.	Mean vol. juice per hour.
100 students	101·6	182·3	199·6
8 with abdominal pain ..	109·4	255·0	267·5
Difference	7·8	72·7	67·9
Value of "t"*	0·76	2·65	3·96

* See Fisher [6]

For this number of cases, the probability that "t" will exceed 2·65 by chance is about 0·01. The second and third results are therefore highly significant, the first is not.

TABLE V C

—	Mean highest free acid.	Mean vol. acid per hour.	Mean vol. juice per hour.
20 students with dyspeptic parents	111·7	229·5	230·5
80 without dyspeptic parents	99·1	170·5	191·9
Difference	12·6	59·0	38·6
Value of "t"*	1·80	3·45	2·95

The probability that "t" will exceed 1·80 by chance is about 0·07, so that the first difference is not significant. The other two values of "t" correspond to probabilities well below 0·01 and indicate a high level of significance.

Three cases out of the 100 had shown achlorhydria with a gruel fractional test-meal on a previous occasion; an inspection of Table IV. shows that their output of acid was not much below the average. This is a point of some interest as these cases presumably correspond to some of the four with achlorhydria in Bennett and Ryle's [5] series of 100 normal students.

Twenty cases out of the 100 had one or both parents with either peptic ulcer or severe dyspepsia of long duration. These students gave no personal history of digestive disturbance. A comparison with the remaining 80 shows again little difference in the concentration of acid, but a highly significant difference in the volume of juice and in the volume of acid (Table V.C).

It may be mentioned here that the method used to test the significance of these results, Fisher's [6] "t" test, takes full and accurate account of the size of the sample so that the chance of these differences being due to the errors of random sampling is an extremely small one. It is, in fact, less than 1·0 per cent. in nearly every case.

DISCUSSION

The principal points of interest in these results lie in the comparisons presented above and in their bearing on the question of normal standards for the histamine test. In addition the volumes of acid have not previously been tabulated and this should certainly be done in view of the fact that they appear to show wider separation in ulcer and cancer of the stomach than either acidity or volumes alone (Polland [1]).

Although our value for the mean total acidity is higher than that of Polland for a similar age-period, the difference is just within the limits of sampling errors. The best estimate is therefore obtained by

combining the two which gives the following result (Table VI.):—

Mean total acidity, 107·0; Standard deviation, 31·5; Standard error, 2·42.

Being based upon 170 cases, these figures should form a satisfactory normal standard for males between the ages of 18–30.

TABLE VI.—*Highest Total Acidity*

A.—100 normal students
E.—Polland's 70 cases
F.—The two series combined
} Males of ages 18–30.

C.cm. N/10 acid %.	A.	E.	F.	C.cm. N/10 acid %.	A.	E.	F.
150–159	—	1	1	30–39	1	—	1
140–149	13	10	23	20–29	—	1	1
130–139	18	11	29	10–19	—	2	2
120–129	13	7	20	0–9	1	1	2
110–119	16	6	22				
100–109	12	5	17	Totals .	100	70	170
90–99	9	7	16				
80–89	4	6	10	Means .	111·0	101·1	107·0
70–79	5	4	9				
60–69	6	4	10	S. D. . .	27·6	35·7	31·5
50–59	2	4	6	S. E. .	2·77	4·27	2·42
40–49	—	1	1	Co. v. . .	24·9	35·3	29·4

The higher volumes of juice and acid in the 8 students with a history of abdominal pain justifies their exclusion from the normal tables, and suggests that some of them may have suffered from peptic ulcer.

The high volumes of acid and juice in the 20 normals with dyspeptic parents is a finding of some interest. Since most of these parents probably had peptic ulcers* and therefore hyperacidity, this amounts to evidence of the inheritance of hyperacidity in normal persons. So far as we are aware no such evidence has previously been adduced, previous work on the inheritance of gastric secretion being confined to persons with ulcers or achlorhydria. This point may be taken as a strong argument in favour of Hurst's [7] conception of the "hypersthenic gastric diathesis" as an inborn condition. There is of course the alternative of the throwing the blame upon the family cook.

We wish to stress the importance in this test of the estimation of the volume of juice secreted (and in the calculation of the volume of acid secreted) upon which doubt has recently been cast by Comfort and Osterberg.[4] It will be seen from the results that the concentration of acid taken alone failed to show any difference in the two sub-groups which have been considered, though highly significant differences were demonstrated in the volume of juice and in the volume of acid. It is however important that the method of estimating the volume should be standardised.

Finally a word of warning must be added respecting the use of histamine in cases with low blood pressure. We have seen dangerous degrees of collapse in such cases even after comparatively low dosage (0·25 mg.) and consider that the blood pressure should be estimated as a routine before the test.

SUMMARY

1. Results of 100 test-meals on normal male students between the ages of 18 and 32 have been recorded.

2. The highest free acidity, the volume of gastric juice per hour, and the volume of free acid per hour have been taken as the useful characteristics of the test.

3. One individual, in perfect health, exhibited achlorhydria even after repeated tests.†

4. The mean total acidity is higher than Polland's value for the same age-period, but the difference is not statistically significant. The two values have therefore been combined to give an estimate which should form a satisfactory normal standard for males from 18–30 years (Table VI.).

5. Eight additional students with a history of abdominal pain showed a higher volume of juice and acid, but no differences in the concentration of acid.

6. Twenty students (out of the 100 normals) who had one or two dyspeptic parents showed definite differences in the volumes of acid and juice, but no increase in the concentration of acid. This is considered as evidence of the inheritance of hyperacidity in normal persons.

7. Some recommendations in the technique of the test have been made, particularly with reference to the method of volume estimation.

8. The greatest caution should be exercised in the use of histamine in cases with low blood pressure.

It is a pleasure to express our indebtedness to Prof. E. C. Dodds and to Prof. S. Wright for valuable help and advice. We are also extremely grateful for the willing coöperation of the students and house officers who formed the subjects of this investigation.

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* Ten parents had had peptic ulcers, and the remaining 11 had had chronic abdominal pain related to meals.

† Since this paper was written a fourth test-meal has been performed on the case of achlorhydria, and on this occasion a small amount of free HCl was obtained in every sample, save the resting juice. The highest concentration of HCl reached was 10 c.cm. N/10 NaOH, and the output of HCl was extremely low.

SURGICAL ANATOMY OF THE ANAL CANAL

WITH SPECIAL REFERENCE TO ANORECTAL FISTULÆ

BY E. T. C. MILLIGAN, F.R.C.S. Eng., F.R.A.C.S.

AND

C. NAUNTON MORGAN, F.R.C.S. Eng.

ASSISTANT SURGEONS TO ST. MARK'S HOSPITAL, LONDON

(*Concluded from p. 1156*)

Recognition of Fistulous Tracts and Openings

An anorectal fistula is the contracted cavity of an abscess which has been inadequately treated and has consequently failed to heal completely by third intention. There is usually an external opening, a main track, and an internal opening. There may be secondary tracks and secondary external openings. W. E. Miles quotes, as a curiosity, a case where these numbered 42. Usually, secondary tracks are absent, and, if present, limited to one or two. Secondary tracks, however extensive, are as a rule placed in the subcutaneous tissues and unrelated to the musculature. They are easily dealt with by incision and do not complicate the surgical problem.

The *external opening* may be obvious with pouting, raised granulation tissue giving rise to purulent discharge, but occasionally the external opening is small with no protruding granulations and admitting only a very fine probe. If hidden by folds of skin or mucous membrane careful search alone will reveal it. Its locality may often be detected from the small discharge of expressed pus only present on occasions. A magnifying glass helps in its location.

In fistulæ of long standing the external openings may be healed, as exemplified in a fistula we observed of ten years' duration. The healed openings are indicated by inconspicuous dimples of scar tissue. No discharge escapes and admission of the probe to the underlying track can only be gained when the dimples are excised. The lining granulation tissue then reveals the fibrous track.

Irregular undermining ulceration at the external opening is characteristic of tuberculous infection. The position of the external opening in relation to the anal canal is of academic interest and suggestive up to a point of the direction of the main track, but palpation of the peri-anal tissues and the inserted probe give the definite information required for safe surgical treatment.

The main track.—Microscopic sections of fistulous tracks show that they are composed of a tube of hard fibrous tissue, the lumen of which is filled with granulation tissue which gives rise to the discharge of pus and blood. The characteristic appearance of granulation tissue aids in tracking the course of the fistula, just as granulations lead the surgeon to dead bone, as its appearance contrasts strikingly with normal surrounding healthy tissue. The fibrous channel moreover prevents the exploring probe, if used gently, from deviating from the course of the fistula, and so reveals its direction. The direction and course of this fibrous track can be palpated through the skin and followed in the ischiorectal fossa and around the anus, as a fibrous cord of induration in the surrounding normal pliable and elastic tissues. Tuberculous fistulæ usually differ from simple inflammatory fistulæ in the absence of this indurated fibrous track; a highly suggestive and important diagnostic point.

In another type of fistula, fortunately rare, the main track eludes discovery and the fistula after many operations remains unhealed. In this type epithelisation of the inside of the track has occurred, granulation tissue has almost disappeared, and the fibrous tissue tube has become thin and pliable and cannot be easily palpated. Moreover, the lumen is narrow and will only admit with difficulty the finest of diagnostic probes. Discharge is intermittent and scanty.

Occasionally one fails to find the main track before and even during operation, but by careful and persistent search with a probe while the wound is healing, the track, which one knows must be present, is now more easily discovered entering the anal canal. When this elusive track is opened by incision the fistula heals.

The importance of careful routine search with probes for tracks in all cases during the healing of the wound cannot therefore be too strongly stressed, for tracks undiscovered before and during operation now become manifest. No amount of careful dressings, on which some lay so much stress, will promote healing if sinuses or tracks are overlooked.

The *internal opening of a fistula* is more easily discovered by light palpation of the anal mucosa with the finger in the anal canal than by inspection with the proctoscope. It may be felt as an indurated irregular obvious ulcer, sometimes as a hard fibrous dimple or rounded projection in the attached mucous membrane. In others there is a tiny indurated nodule or "roughness" indicating the end of a fibrous tube under the intact mucous membrane, only discernible to the lightest palpation but standing out in contrast to the surrounding smooth anal canal. In some the opening cannot be palpated although present, but a probe passed through the main track will find its way through the internal opening into the anal canal, or the point of the probe can be felt in the submucosa through the healed and intact mucous membrane. For purposes of safe surgical treatment the relationship of the internal opening and main track to the anorectal ring should now be determined by palpation. It should be noted whether they lie above or below the ring.

The openings of anal and rectal submucous sinuses, although often palpable, are sometimes best found with a proctoscope. Pus expressed from the sinus by the pressure of the end of the instrument shows the position of the opening, and a thin probe, straight or bent, entering at this point will reveal the direction of the track.

Healing of Fistula-in-Ano

It is now the accepted custom to apply no healing balm or lotion to wounds that heal by *first intention*. Reliance is placed on nature's healing powers. When healing by *second intention* is invoked, however, dissatisfaction with nature's rate and method of healing is at once implied by subjecting the wound to applications of lotions or ointments, labelled by the manufacturers, or even in the mind of the surgeon, soothing, stimulant, antiseptic, or caustic. In spite of this misguided attention, healing by second intention, provided the surgery is correct, maintains its own course and time, confirming the credulous in their faith and bestowing reputations on numberless and ever-changing applications.

The Winnett Orr treatment of osteomyelitis, the healing of ulcers under adhesive plaster (Maclure, Dickson Wright), and the healing of a colostomy wound bathed in fæcal flora must at least arouse the critical faculties in those who imagine they possess the power to stimulate, soothe, retard, or sterilise a granulating wound with applications.

Theoretical views advanced for the fact that surgically untreated fistulæ-in-ano never heal are well known and need not be mentioned here. Howbeit, it is common experience to see suprapubic vesical fistulæ, gastric fistulæ, and cæcal fistulæ heal naturally and unaided. Healing takes place by adherence of the walls of granulation tissue along the track of the fistula. To this method is given the name, healing by *third intention*. Abscess cavities in other parts of the body also successfully heal by this method.

A fistula-in-ano results from the failure of an abscess in this region to heal by third intention. To promote healing, surgical treatment is always necessary and consists in so incising the track of the fistula that the open flat wound thus obtained will heal by second intention. In other words, healing occurs by the growth of granulation tissue from the base of the wound and by the covering of this granulating surface with epithelial cells from the skin or mucous membrane at the periphery. This method of healing is nearly always employed in rectal surgery as it is the only method in this area upon which complete reliance can be placed. The prevention of bridging, pocketing, of overhanging skin, especially at the anal verge, and of sinus-formation—i.e., prevention of attempts to heal by third intention during convalescence—is all that is necessary from the surgeon. Healing by second intention is then the rule if specific infections, tuberculosis, and syphilis are absent.

To change nature's unsuccessful attempts at healing by third intention into the successful process of healing by second intention, a fistula must therefore be incised along the whole track. All overlying tissues

from the external to the internal opening must be cut and overhanging skin edges removed so that a flat wound is obtained. This is technically simple to accomplish when the tracks and openings are found, but anxiety and difficulties arise owing to the relation of the tracks to the anal muscles which, in certain fistulæ, are in the overlying tissues and so would necessarily be cut in order to lay open the tracks.

Classification

In the past the main problem, the relationship of the fistulous tracks to the anal musculature, has been obscured by a complicated classification based on the shape and direction of the subcutaneous tracks. We submit the following classification as being simple and practical (Figs. 15 and 16).

1. Subcutaneous and submucous fistulæ.
2. Fistulæ with main tracks entering the anal canal *below* the anorectal ring (anal fistulæ): (*a*) low level anal fistula; and (*b*) high level anal fistula.
(3) Fistulæ with track extending *above* the anorectal ring (anorectal fistulæ): (*a*) with internal opening into rectum; (*b*) without internal opening; and (*c*) with main track opening into anal canal below anorectal ring.

FISTULÆ WITH MAIN TRACKS ENTERING THE ANAL CANAL BELOW THE LEVEL OF THE ANORECTAL RING (FIG. 15) (ANAL FISTULÆ)

(*a*) *Low level anal fistulæ.*—The majority of fistulæ-in-ano enter the anal canal at its lower extremity and are closely related to the easily palpable subcutaneous sphincter ani externus.

The track enters the anal canal just above this muscle in the region of the anal intermuscular septum between the subcutaneous external sphincter and the lower border of the internal sphincter ani, where the internal opening can usually be demonstrated by probe and palpation. In some cases, however, the main track then extends upwards under the mucous membrane, and the internal opening is situated at a higher level, sometimes above the anorectal ring. This submucous extension of the main track must be treated as a submucous fistula. Sometimes there are two internal openings, the upper one just described at the upper end of a submucous extension, the other an opening in the mucous membrane where the main track runs between the sphincter muscles. It is not always easy to demonstrate the

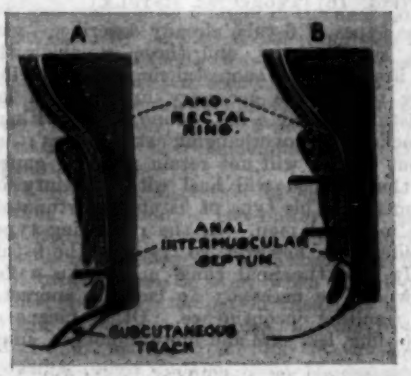

FIG. 15.—Fistulæ with main tracks entering the anal canal below the anorectal ring. (*a*) Low level anal fistula; (*b*) high level anal fistula.

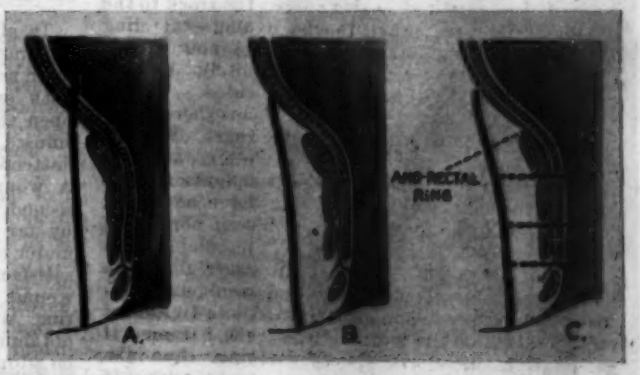

FIG. 16.—Fistulæ with track extending above anorectal ring. (*a*) With internal opening into rectum; (*b*) without internal opening; and (*c*) with main track entering anal canal below anorectal ring.

Surgical Treatment of Fistulous Tracks in Relation to Sphincter Ani Muscles

SUBCUTANEOUS AND SUBMUCOUS FISTULÆ

A probe is inserted through the external or lower opening, then along the main track and made to emerge at the internal or upper opening. If the sinus is blind an incision at the point of the probe allows it to emerge. The probe is now felt to lie under the skin or mucous membrane and superficial to all the sphincter muscles, and is liberated by incising the overlying tissues, which in this type of fistula consist only of skin or mucous membrane. Sphincter muscles are out of the scope of the operation. The resulting wound is made flat by excising overhanging skin edges.

It is worthy of mention that some subcutaneous sinuses radiate outwards from the anal verge, and submucous fistulæ often take a circular or curved course under the rectal mucosa above the anorectal ring, so that a bent or angled probe in these circumstances is helpful. These submucous tracks pass in close relation to the hæmorrhoidal vessels in the submucosa. Hæmorrhage, difficult to arrest, may follow their incision where the tracks extend above the anorectal ring, so it is well to follow the ancient method of opening the track by destroying the mucosal roof by strangulating ligatures.

exact relationship of the fistulous track to the external sphincter ani subcutaneus, because inflammatory fibrous tissue has altered and obscured the anatomical outlines, but the muscle may be identified by palpation and followed from an adjacent unaltered area. The division of the subcutaneous external sphincter ani, in part or whole, or in any direction, as we have seen, is harmless to sphincter control, for it leaves intact the deep and superficial part of the sphincter ani externus above, as well as the puborectalis with the anorectal ring.

To establish the relationship of the main track to the subcutaneous external sphincter is therefore only of academic importance, but of practical importance is the relationship of the track to the anorectal ring. A probe passed from without through the main track into the anal canal is felt to lie at some distance below the anorectal ring, so that the probe can be safely liberated by cutting the overlying muscle and skin, leaving the ring intact. The submucous extension upwards is now sought with the probe, and, if present, opened into the anal canal or rectum. It is obvious that division of a submucous track does not injure the musculature.

(*b*) *High level anal fistulæ.*—This type of fistula is less common and a more difficult problem. The main track usually enters the anal canal at its upper part

in the posterior segment just below the anorectal ring. They are often of long standing and have been preceded by widespread infection with resulting curved subcutaneous tracks in one or both ischiorectal fossæ.

The exact position and relationship to the anorectal ring must be accurately established. In this lies the chief problem.

A probe inserted along the main track from without into the anal canal will be felt to lie just below the anorectal ring, some muscle forming the ring being definitely felt lying above the probe. It now requires courage and assurance to liberate the probe by cutting the large bundle of muscle lying below it. Those in doubt would leave the division of the muscles till the large wound left by the opening up of the rest of the track into the ischiorectal fossæ has almost healed; the so-called *two-stage operation for fistula*. By this means the muscles, bound down by new fibrous tissues during the preliminary healing, are said to retract less when divided. It is safest to adopt this two-stage method if the relationship of the track to the anorectal ring cannot definitely be decided. It has no other advantages over the one-stage operation. We have never yet seen nor felt it justifiable to ascertain the result of complete division of the anorectal ring by the technique of the two-stage operation, but believe that even this manœuvre would not prevent incontinence.

FIG. 17.—Surgical treatment of fistula extending above anorectal ring. Wound guttered backwards towards coccyx. Anus and anal muscles intact.

Because of their intimate relationship and altered condition due to fibrous infiltration, it is difficult to identify by name the muscles divided in this type of fistula. It is probable that part of the deep, all the superficial, and all the subcutaneous external sphincter are cut, as well as the corresponding related parts of internal sphincter and longitudinal muscle. The puborectalis and some intimately attached fibres of the deep external sphincter ani together with the related portion of the internal sphincter ani and longitudinal muscle are left intact, forming the complete anorectal ring. It is often found after healing has occurred that the narrow ring left posteriorly becomes rigid and fibrous. However, as long as it has been left complete and intact, satisfactory control is assured whether the operation is done in one or two stages. This type of fistula readily heals, for a satisfactory flat granulating wound is surgically obtainable.

It should be pointed out that low spinal anæsthesia, now commonly used in rectal surgery, by causing muscular relaxation adds to the difficulty of palpating the relaxed anorectal ring in relation to the probe, unless this relationship has been established previously. Under such conditions when doubt exists, the division of the muscle should not be carried out at this operation. The estimation of the exact relationship will only be possible when the musculature has recovered from the effects of the anæsthesia. It is suggested then that light general anæsthesia be employed in this type of fistula if relationship to the anorectal ring is uncertain.

Associated with high level anal fistulæ, short tracks would be expected and indeed are found where suppuration has spread between the longitudinal and circular muscles before breaking through into the anal canal (intermuscular fistula). These tracks resemble submucous fistulæ from which they are difficult to distinguish because of surrounding inflammatory thickening.

At operation the inlying probe should be liberated into the anal canal by cutting the overlying tissue. Severance of the internal sphincter in this manner has no effect on anal function, as the anorectal ring remains intact.

FISTULÆ-IN-ANO WITH MAIN TRACK OR SINUS EXTENDING ABOVE THE ANORECTAL RING (FIG. 16) (ANORECTAL FISTULÆ)

In all the types of fistulæ already described—viz., submucous, subcutaneous, and those in which the main track lies below the anorectal ring—it is possible with safety to cut the necessary muscles and lay open the fistula so that a flat wound is left without sinuses, pockets, or overhanging skin edges; so flattened out that it will not retain plugging gauze. A wound thus shaped will heal with certainty by second intention. This type of fistula is fortunately by far the most common. In the remaining types under consideration, however, to lay open the fistula satisfactorily into the anal canal and make a flat wound it would be necessary to cut the anorectal ring, with resulting incontinence. Other means of obtaining healing, less sure and more prolonged, must be adopted.

Although *three types* of fistula-in-ano with main tracks or sinuses extending above the anorectal ring are encountered, the principles of treatment in all are the same.

The rarest and perhaps the one type in which it is most difficult to obtain healing is characterised by an internal opening into the rectum itself. The external opening is situated about 1½ in. to 2 in. lateral to the anus on the skin of the floor of the ischiorectal fossa. The main track takes a straight course upwards and inwards to the rectum roughly parallel to the long axis of the anal canal through the ischiorectal fossa, piercing the lateral part of the levator ani (ileococcygeus). A probe passed along this main track is felt to emerge in the lateral wall of the rectum 1 in. or more above the anorectal ring.

In the *second type* the main track is similar to that already described, but there is no internal opening into the rectum. The point of the probe at the uppermost limit of the main sinus is felt through the intact rectal wall lying 1 in. or more above the anorectal ring, the rectal wall intervening.

In the *third type*, like the second, there is no internal opening into the rectum above the anorectal ring, but with a probe the track is found to extend above this level. There is, however, an opening into the anal canal below the anorectal ring. The high sinus, in this type, is in fact an offshoot or secondary sinus from the main track of a fistula which enters the anal canal below the anorectal ring posteriorly.

SURGICAL TREATMENT

Anatomical considerations prevent the conversion of such deep tracks in the ischiorectal fossa into a flat wound which would be the guarantee of ultimate

healing. One must be content with guttering the track, and, as will be shown, this can only be carried out in the first instance posteriorly towards the coccyx (Fig. 17).

When the boundaries of the ischiorectal fossa are considered, it will be appreciated that if the deep track is incised and extended forwards, the incision would pass through the transversus perinei muscle and into the urogenital triangle. This is undesirable. An outward guttering of the track is prevented by the tuber ischii. Incontinence would follow the usual method of laying open the whole length of such a track inwards into the anal canal, for as the track extends above and outside the anorectal ring, the ring together with the rest of the anal musculature would necessarily be severed.

Posteriorly the skin level just lateral to the coccyx is approximately on the same horizontal plane as the roof of the ischiorectal fossa, which is about the upper limit of the track under consideration, so we are happily enabled to gutter the surgical wound by cutting backwards from the track through the tissues and skin of the ischiorectal fossa to the level of the coccyx. During this procedure the anal muscles are felt and guarded by a finger in the anal canal.

On the very rare occasions where the upper limit of the track extends two or three inches above the anorectal ring, it has been found necessary to remove the coccyx to obtain adequate grooving of the resulting cavity backwards. Such a procedure is a successful alternative to the condemnation of the case as incurable.

To retard re-formation of sinuses by rapid skin healing the whole of the unimportant skin floor of the ischiorectal fossa is liberally removed, leaving a wide funnel-shaped wound from the floor to the roof of the fossa. Later, when the depths of the wound fill with granulation tissue, as is its custom, bringing its level to below the anorectal ring as judged by palpating the end of the probe in the wound through the anal canal, the sphincter muscles below the anorectal ring can be safely cut. Thus the inner wall of the wound will now also be guttered and so healing by second intention is hastened and assured.

The internal opening into the rectum described in the first type should be disregarded. If it is not large, or if its walls are not rigid, it will probably heal as the surgical wound in the ischiorectal fossa heals. This type impresses more by the difficulties of healing than by its frequency, for it is fortunately rarely seen in a large experience.

Inflammatory fibrous tissue surrounding the main track in these types has made identification of the related lateral portion of the levator ani (iliococcygeus) through which the main track passes difficult and uncertain, but as this portion is the thin fibrous degenerated tail muscle and has no direct connexion with the rectum or sphincteric action, anxiety need not be felt in incising what is necessary for the adequate surgical treatment of the fistula.

AFTER-TREATMENT

The resulting extensive wound calls for supervision during the long process of healing to prevent further sinus formation, to maintain guttering, and to remove ingrowing skin edges if necessary. In accordance with modern ideas of wound dressing, daily changing of dressings to the deep parts of the wound are unnecessary although the surface gauze will daily become soiled and should be changed. For the first sensitive dressings some suitable form of short anæsthesia prevents unnecessary suffering. In the cases under our care four to ten months have elapsed before healing is complete.

Routine pathological examination is strongly recommended in this type of sinus, for it sometimes reveals tuberculosis as the unexpected cause.

Summary

(1) An account of the muscles of the anal canal is given.

(2) The "surface" anatomy of the anal canal is described together with the palpable landmarks and their relation to pathological lesions and to function.

(3) The identification of fistulous tracks, their surgical treatment in relation to the anal musculature, and their method of healing are considered.

(4) A simplified practical classification of fistulæ in relation to palpable landmarks in the anal canal is submitted.

TWO CASES OF AGRANULOCYTIC ANGINA

ONE FOLLOWING THE ADMINISTRATION OF ALLONAL

BY J. H. FISHER, M.B. Sydney

TEMPORARY ASSISTANT MEDICAL OFFICER, NORTH EASTERN FEVER HOSPITAL (LONDON COUNTY COUNCIL)

THE two cases of agranulocytic angina here recorded were admitted to the North Eastern Fever Hospital certified as suffering from diphtheria.

CASE 1.—A man, aged 23, was admitted to hospital on June 1st, 1934, at 9 P.M. and died on June 2nd at noon.

Previous illnesses.—Measles, chicken-pox, tonsillitis. No history of taking drugs of any kind.

History.—Prior to the illness for which he was admitted he was perfectly well. On May 26th, six days before admission, he began to complain of headache and sore-throat and generalised aches and pains. The glands of the neck became very much enlarged and at times he was delirious. On May 31st he was noticed to be slightly yellow.

On admission on June 1st he was very emaciated, moderately jaundiced, and appeared critically ill. Temperature 103° F., pulse-rate 130, respiration-rate 30. There was very extensive cervical adenitis and periadenitis, giving the appearance of "bull neck." The fauces were very inflamed and œdematous, with ulceration and irregular areas of sloughing involving the tonsils and anterior pillars. There was a greyish-white membrane on both tonsils extending on to the anterior pillars, soft palate, and posterior pharyngeal wall. The patient was conscious on admission and able to answer questions, but became rapidly worse. The next morning he was unconscious, sweating profusely, with a rapid and weak pulse and irregular respirations. He died at noon.

Investigations.—Culture of nose and throat for diphtheria bacilli was negative. Swab of nose and throat for hæmolytic streptococci: nose, negative; throat, a few colonies of hæmolytic streptococci. Van den Bergh reaction: direct, delayed; indirect, positive. Blood count: leucocytes, 1000 per c.mm., no granulocytes seen; red cells, normal; platelets, fairly numerous. Blood culture: a pure culture of pneumococcus was obtained.

Post-mortem findings.—Kidney: œdema of interstitium; patchy congestion of glomeruli; marked degeneration in convoluted tubules, varying from breakdown of tips of cells into the lumen to complete disappearance of nuclear staining. The main lesion seems to be this (apparently toxic) tubular degeneration. Liver: very little fat, though a very fine dusting does show in a number of cells; only slight degenerative changes in liver cells; some œdematous swelling of the fine connective tissue of the sinusoid walls and some proliferation of Kupffer cells. Spleen: congestion of sinusoids and considerable proliferation of reticulo-endothelial cells of pulp. No marked changes in Malpighian bodies. In contrast to the liver and kidney, which showed practically no polymorphs, there are quite appreciable

numbers here—almost all of them showing marked degeneration—sometimes distortion and hyperchromatism of the nucleus, sometimes fragmentation of the nucleus into hyperchromatic fragments, and sometimes partial chromatolysis. In at least one instance a degenerated polymorph lay engulfed in the cytoplasm of a large pulp phagocyte. Bone-marrow: no decided change, qualitative or quantitative, in red cell series; polymorphs absent, myelocytes practically absent, but considerable numbers of myeloblasts—rather as if it were the maturation of the cells which was inhibited. Lungs and heart: nothing abnormal detected.

CASE 2.—Miss A. B., aged 62, was admitted to hospital on June 18th, 1934, at 4 P.M., and died on the 19th at 2.20 P.M.

History.—She had been treated for diabetes for 18 months and on June 2nd was admitted to a general hospital for standardisation of diet and insulin requirement. She was having a high carbohydrate diet, the caloric value of which was 1500, and was receiving insulin three times a day in doses of 15, 10, 15 units. Her general condition was good and she was getting up each day. Whilst there, she received one tablet of Allonal (allylisopropylbarbituric acid with amidopyrin) each night from May 30th to June 16th. This was then changed to Medinal grs. 5 nightly until June 18th. She became ill on June 16th with nausea and vomiting. On the 17th she developed a sore-throat. A swabbing from the throat was examined and the case was thought to be one of diphtheria, and she was transferred to the North Eastern Fever Hospital. After the development of these symptoms she had been having 100 g. of glucose by mouth four-hourly, with 50 units of insulin four-hourly.

State on admission.—Temperature 102° F., pulse-rate 124, respiration-rate 32. She appeared very ill. There was marked bilateral cervical adenitis and periadenitis. The tongue was dry and the fauces much inflamed and œdematous. Sloughing and gangrenous areas on the tonsils were covered with a greyish-white membrane which extended on to the uvula and posterior pharyngeal wall. Her condition rapidly became worse and she died at 2.20 P.M. the next day. She was conscious until shortly before death. Repeated examinations of the urine showed only small to moderate quantities of sugar and no acetone or diacetic acid. A fairly heavy cloud of albumin was present.

Investigations.—Culture of nose and throat for diphtheria bacilli: negative, no spirilla or fusiform bacilli found. Swab of nose and throat for hæmolytic streptococci: negative. Blood count: leucocytes, 400 per c.mm.; no granulocytes present. Red cells, normal; platelets, numerous.

Post-mortem findings.—Pharynx and tonsillar fossæ in region of maximal local lesion: the picture is that of an intense and widespread inflammatory process, going on in parts to necrosis, yet completely lacking in the usual polymorph reaction, and showing only a slight lymphocytic reaction. The following changes are seen in the kidneys. Glomeruli: thickening of capillary basement membranes; a few scattered hyaline glomeruli. Afferent arterioles; some hyaline thickening. Larger arteries: fairly marked arterial sclerosis. Interstitium: slight patchy increase. Tubules: considerable recent degeneration of convoluted tubules. Lumen often shows albuminous material and debris of tips of lining cells. Arterio-sclerotic kidney, with sufficient arteriolar change to suggest the presence in life of some degree of (benign) essential hypertension; not insufficient kidneys.

Pancreas: islets rather large, with in a minority a very considerable amount of hyaline change; some pyknosis of islet cell nuclei; some arterial sclerosis, with hyaline thickening of arterioles; pancreatic acini and ducts, nil abnormal noted. Liver: some congestion; nil important noted. Spleen: sinusoids dilated; some proliferation reticulo-endothelial cells and a fair amount of brown pigment both intra- and extra-cellular; practically no polymorphs seen; Malpighian bodies fairly conspicuous. Bone-marrow (sternum): no polymorphs and hardly any myelocytes, but considerable numbers of myeloblasts; normoblasts rather scanty. Femoral marrow: almost entirely fatty, but there are a few small groups of cells (probably myeloblasts) around some capillaries.

COMMENT

Both the cases described present the typical features of agranulocytic angina—an acute febrile illness, necrotic and ulcerative lesions in the mouth and pharynx, and an extreme reduction of the granulocytes in the blood stream. Case 1 was found to have a terminal pneumococcal septicæmia. Terminal invasion of the blood stream has been described many times and a multiplicity of organisms found.[1]

Recently there has been much discussion concerning the ætiological significance of certain drugs in agranulocytic angina. S. Stephen Bohn,[2] Solomon Silver,[3] and Davidson and Shapiro [4] reported cases following ingestion of dinitrophenol. Madison and Squier [5] reported 14 cases in which the onset was directly preceded by the use of amidopyrin alone or in combination with a barbiturate. Allonal (allylisopropylbarbituric acid with amidopyrin) was the drug used in six of the cases. The mortality in a group of six patients who continued the use of drugs containing amidopyrin throughout their illness was 100 per cent. In a group of eight patients who did not continue the use of these drugs, only two died, and both of these died shortly after the drug was withdrawn. The administration of a single dose of amidopyrin to two patients who had recovered from an acute attack was followed by a rapid and profound fall in the granulocytes. Some experimental work was performed on rabbits; 17 out of 18 to which allonal was administered orally showed no significant change; the eighteenth showed an abrupt drop of granulocytes and died on the thirtieth day. Preceding death there was a complete loss of granulocytes in the peripheral blood. Their conclusion was that amidopyrin alone, or in combination with a barbiturate, is capable of producing primary granulocytopenia in certain individuals who have developed sensitivity to the drug. Case 2 can be considered as belonging to this group. The patient developed the condition while in hospital. Although suffering from diabetes, her general condition was good and she was getting up each day. While there she had one tablet of allonal daily for 17 days and the medinal grs. 5 for two days. Her symptoms commenced on the seventeenth day. Apart from an occasional aspirin, she had taken no drugs prior to this. In Case 1 no drugs of any kind were being taken prior to the onset of symptoms. It therefore belongs to that series of reported cases in which no ætiological factor can be determined.

The pathology of the bone-marrow in agranulocytic angina is variable, either hyperplasia or aplasia of the myeloid elements being reported. Both these cases show a complete absence of polymorphonuclear leucocytes, very few myelocytes, but numerous myeloblasts, the findings being similar to those described by Fitz-Hugh and Krumbhaar,[6] who put forward the hypothesis that the myeloid hyperplasia is due to a "primary maturation arrest" rather than to a "primary aplasia," and pointed out certain analogies to pernicious anæmia. In purpura hæmorrhagica the bone-marrow may show either megakaryocyte hyperplasia or aplasia. Douglas Hubble [7] suggests that there is one variety of agranulocytic angina and one variety of purpura hæmorrhagica allied to aplastic anæmia, for in all three the formation of blood-cells is arrested at the reticulo-endothelial stage by the absence of certain factors. The other varieties are comparable to megaloblastic anæmia. In this last there is a circulating anæmia in spite of proliferation of the megaloblast, hyperplasia of the megakaryocytes with a peripheral thrombocytopenia,

and a myeloid hyperplasia with a peripheral agranulocytosis. We were unable to obtain supplies of Pentnucleotide in time to carry out treatment, as the two cases died 15 hours and 23 hours respectively after admission.

I desire to express my thanks to Dr. W. Mair and Dr. J. Gray for their valuable assistance and advice in the pathological and hæmatological investigations involved, and to Dr. E. H. R. Harries, medical superintendent of the North Eastern Fever Hospital, for his permission to publish these cases.

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AGRANULOCYTIC ANGINA

A CASE TREATED WITH PENTNUCLEOTIDE

BY E. J. SMITH, M.B. Lond.

TEN cases of agranulocytic angina in this country have been recorded. In America the disease has been recognised for upward of ten years, and series of cases—one of them comprising over 300—have been collected. Five of those described in the English literature were given pentose nucleotide, and in some at least the response was not quite similar to that obtained by American writers.

The routine use of Pentnucleotide (formerly nucleotide K–96) has materially altered the prognosis of this disease. In a series of 328 cases only 82 recovered without specific treatment.[1] Jackson, Parker, and Taylor treated 69 cases with pentnucleotide, of whom 51 recovered.[2] C. A. Doan[3] in 1932 worked out the following Table, showing the percentage mortality of this condition and how it varies with different treatments.

Treatment.	Cases.	Deaths.	Percentage mortality.
Untreated	—	—	90+
Miscellaneous ..	178	133	74
Arsphenamine ..	33	24	72
Blood transfusion ..	53	34	64
Irradiation	64	34	53
Nucleotide	44	11	25

The American writers found that the blood picture consistently showed improvement on the fifth day of treatment with pentnucleotide, whereas Bulmer's[4] patient, who received pentnucleotide, began to improve with the commencement of the injections. The case I am recording here also showed the interval of four days before improvement started. The severity of the toxic manifestations or complete absence of polymorphonuclears from the blood do not appear to render recovery less likely when pentnucleotide is given. One patient with a temperature of 106·5° F. recovered. Those cases in which a typical blood count is discovered during an obvious infection, such as osteomyelitis, and those in whom the neutropenia appears to be primary, carry the same prognosis. The case reported by Wilkinson and Israëls[5] in many ways resembles the one described below, and the response to pentnucleotide was almost identical.

CASE REPORT

The patient, a woman aged 49, previously healthy, was admitted to King's College Hospital during the night of May 3rd, 1934. As the chief manifestation was extensive ulceration of the mouth, she was admitted, as an emergency, to the surgical side. The woman was very severely ill.

About four weeks before admission there had been an attack of "influenza." This was of sufficient severity to keep the patient confined to bed for a fortnight, and was characterised by generalised pains, nausea, vomiting, and extreme weakness. No doctor was in attendance during this illness. Two Allonal tablets had been taken, and these would contain a total of grs. 3 of amidopyrin.[6] About two weeks after getting up from this attack an ulcer was noticed on the floor of the mouth. The patient was not aware of any trauma to account for this. The area of ulceration increased steadily, and when it had been in progress for some seven days her husband, who is a dentist, extracted two incisors which had been loosened by the ulceration.

The patient was admitted ten days after the onset of the buccal infection. Her temperature was 102° F., pulse-rate 116, and respirations 26. She was sweating profusely. Both arms were the site of small, irregular erythematous areas, but no petechiæ were seen there or elsewhere on the body. There had been no diarrhœa, and there were no signs of infection of the lungs. The breath was extremely offensive, and the patient was scarcely able to speak. The floor of the mouth, anterior to the root of the tongue, was occupied by a large deep ulcer. This had spread on to the posterior surface of the mandible and over the alveolar process, from which the two teeth had been extracted. Posteriorly it had involved the root of the tongue. The submental and submaxillary triangles on both sides were the sites of brawny infiltration, but there was no suggestion of fluctuation. The floor of the ulcer was covered with a brownish-white slough which was tough and firmly adherent. The teeth were dirty.

Local measures, such as hourly fomentations and hot mouth washes, were ordered.

Two days after admission, when the temperature ranged from 100·8° to 103·2°, the blood count was as follows:—

Red cells ..	4,400,000	Lymphocytes	53·5%
White cells ..	2800	Mature polymorphs ..	0·5%
Hæmoglobin	84%		
Colour-index ..	0·95		

The remaining white cells were myelocytes and metamyelocytes, with a few hyaline mononuclears.

The relation of the onset of neutropenia to the menstrual cycle cannot be ascertained in this case, for the menopause had occurred several months previously.

On May 6th her condition was unchanged. The temperature varied between 102·4° and 103·4°. Six doses, each of 1 c.cm. of nucleic acid, were injected at four-hourly intervals. As Vincent's organisms had been found in smears taken from the ulcer, 3 c.cm. of Stabilarsan were given. The next day the patient was definitely worse and the temperature did not rise above 100·8°. Difficulty in swallowing had been present for some days, but on the seventh was so severe that sips of fluid could not be swallowed. The ulceration was extending, but no suppuration occurred. The rash was still present on the arms. The teeth lateral to the gap formed by the recent extraction were very loose. The blood count on this day showed:—

Total leucocytes ..	2000	Lymphocytes	80%
		Polymorphs	5%
		Metamyelocytes ..	13%
		Large hyaline mononuclears	2%

Bacteriological examination of smears taken from the ulcer showed Vincent's organisms, non-hæmolytic streptococci, *Micrococcus catarrhalis*, but no diphtheroids.

On the 9th the condition was as before. On this day two doses, each of 10 c.cm. of pentnucleotide, were given intramuscularly. After the first injection the temperature rose suddenly by 3·6°. 0·3 g. of novarsenobenzol was also given. The fluid intake was kept up to five pints daily, almost entirely by the subcutaneous and rectal routes, as not more than a few drachms could be taken

by the mouth in 24 hours. The next day the same dosage was given three times a day, and this was continued until the 13th. The reactions to the injections gradually decreased. On May 14th, at the end of the course of pentnucleotide, the temperature was 98·4° and the pulse-rate 88.

By May 12th the general condition showed improvement and another count was advised. This, after four complete days' treatment, was:—

Total leucocytes ..	7000	Polymorphs	73·6%
		Lymphocytes ..	24·8%
		Large hyaline mononuclears	1·6%

The polymorphs are fully mature and granular. This figure includes 3 per cent. of myelocytes.

Two days after the completion of the course the patient could swallow any liquid form of nourishment. The submental region was still brawny, but the inside of the mouth was considerably cleaner. A further blood count showed that the improvement in the blood picture was fully maintained: total leucocytes, 6800; polymorphs, 68·4 per cent. (including a small proportion of myelocytes and metamyelocytes); lymphocytes, 31·6 per cent. The general condition remained good. On May 17th the ulcer was much cleaner and the slough was being cast off. One loose tooth was removed digitally. On the 22nd the patient was able to get up. Another count, nine days after the last dose of pentnucleotide, showed: total leucocytes, 7800; polymorphs, 63·5 per cent.; lymphocytes, 36·5 per cent.

On June 6th two more loose teeth were removed. A large piece of bone had become loose, but around it the previously ulcerated surface was rapidly becoming epithelialised. Seven days later a large sequestrum was removed under general anæsthesia. This sequestrum measured 1½ by 1 inches, and consisted of the alveolar process and a scale-like flake from the posterior surface of the mandible. On June 17th the patient was discharged. The ulcer was completely healed. The patient was seen in September, when she appeared to be in perfect health.

The case illustrates the two salient features of this syndrome: severe ulceration of the alimentary tract combined with extreme neutropenia. The existence of a previous illness, labelled "influenza," appears to support the theory that some previous toxic process damages the marrow, rendering the tissues extremely susceptible to the slightest infection. A history of a previous illness, or infection, is common in these cases, but the type of infection does not appear to be specific. In Pilkington's [7] case the agranulocytosis supervened on lymphadenoma; in another the condition followed measles.

My best thanks are due to my late chief and teacher, Mr. Harold C. Edwards, surgeon to King's College Hospital, for permission to publish this case and for his helpful interest; and to Dr. E. ff. Creed, director of the pathological department of the hospital.

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THE ORIGIN OF CARDIAC ŒDEMA

By MARTIN O. RAVEN, D.M. Oxon., M.R.C.P. Lond.
PHYSICIAN TO RAMSGATE GENERAL HOSPITAL

THE introduction of the mercurial diuretics, given by intravenous or intramuscular injection, during the last few years (e.g., Salyrgan) has produced two remarkable effects upon our approach to chronic heart failure. Firstly, it has very largely modified the course of the closing stages of this disease, and secondly, by doing so, it has opened the way to further speculation and research regarding the physical and chemical processes involved.

The cases of chronic heart failure here under consideration are not those in which toxic or infective processes (e.g., rheumatic infection) directly poison the heart and cause it to fail, but those cases, usually occurring between the ages of 50 and 80 years of age, in which it may be fairly argued that the disabling changes are largely mechanical, whether or no they are the results of fibrosis following from old infections now quiescent. Until recent years chronic right heart failure has been one of the diseases involving a great deal of distress and suffering; again and again it has been necessary in a given case to administer morphia to secure relief at night, with the result that the patient has awoken next morning feeling greatly improved but only to fall into another attack of cardiac asthma later in the day, while the continued accumulation of fluid in the body has led to congestion of the lungs and alimentary tract, and to increasing œdema.

To-day, under the influence of intensive diuresis obtained by the group of drugs of which salyrgan is one, it is possible to get rid entirely of the excess of fluid from the body by a course of injections, with the result that the condition of the patient is one of comparatively great comfort. The encumbring masses of fluid called œdema are turned out through the kidneys, the breathing becomes easy and free from cardiac asthma, the congestive dyspepsia almost abolished, the appetite often good, and the action of the heart quietened. Moreover, under the improved conditions, the digitalis group of drugs is far more easily tolerated by the stomach, and, even where fibrillation is present, these drugs are required in smaller doses or can even be omitted altogether owing to the eased action of the heart. Under these conditions it need hardly be added that the disease is deprived of most of its distress.

One other condition in the patient is always very prominent in this type of case and that is loss of weight, even to emaciation. Loss of weight should be regarded, of course, as a response to rather than as a symptom of heart failure; naturally the smaller the area the heart has to supply, the greater its relative efficiency, and stabilisation in a case of early failure after the loss of a stone or two in weight is a common observation. After effective diuresis by salyrgan the enormous loss of flesh in an advanced case is no longer masked by œdema and is an arresting feature, though it is clear that the comfort of the patient is greatly improved by it.

After tapping of the legs or pleura in right heart failure, patients often ask "where all the water comes from." Our knowledge that it results from passive venous congestion, though correct, does not fully answer the question. Surely it is clear that the fluid must come from the rapid breakdown of the body tissues (resulting in loss of weight); pints may be withdrawn from the subcutaneous tissues or serous

cavities, and five or six pints may be got rid of by forced diuresis by salyrgan on successive occasions in a few hours, while the patient remains on a dry diet. That carbon dioxide is being similarly got rid of is seen in an unrelieved case in the attacks of dyspnœa, and it would be useful to know if the urea output is similarly increased during the phase of rapid loss of weight. It seems likely that the products of the enforcedly rapid metabolism (water CO_2 and urea) are represented by excess of CO_2 in the blood (dyspnœa), excess of water in the body (œdema), and perhaps by excess of urea excretion. It is very possible also that until the œdema can be got rid of by forced diuresis the process of rapid loss of weight is to some extent held up.

It is also very interesting to note that when the mass of œdema has been got rid of, which is usually possible except where the tissues have got overstretched with the fluid, cessation of the salyrgan injections is likely to be followed by reappearance of localised patches of œdema, often in the flanks or forearms; the localisation no doubt depends on the permeability of the capillaries at the point in question, but the actual new fluid may possibly come from the diet, where the patient has ceased to lose weight. We are taught that we all eat far more than is really necessary for our bodily requirements, and the appetite of the cardiac patients under salyrgan treatment is often very good. That being the case, such foodstuffs as they absorb must either be built up into the body and so cause undesirable gain of weight, or it must be metabolised into water, CO_2 and nitrogen, and to find out to what extent the excretions are related to the diet and body-weight in these patients would be an interesting object of research. At what point loss of weight becomes incompatible with life under these conditions would be a further question, but it is possible to imagine life able to be prolonged to an indefinite period if stabilisation of weight could be balanced by a minimum of diet and exertion.

In one other condition the salyrgan group of drugs is also very useful, and that is in pulmonary œdema. Here no doubt they act in the same way as a venesection. Pulmonary œdema is said to be due to the right heart acting well while the left heart is failing, and venesection or forced diuresis probably acts by depriving the right heart, so to speak, of its ammunition. At any rate, effective diuresis by this method is very useful in preventing attacks of dyspnœa due to acute or subacute pulmonary congestion in heart failure, and its action must be one of removing excess of fluid from the circulation. Possibly the use of these drugs may before long become so much a matter of routine that they will be used on all occasions to prevent rather than to relieve cardiac œdema. Cardiac œdema, in short, may come to be a symptom that should not be allowed to arise.

CLINICAL AND LABORATORY NOTES

A SPECIMEN OF THE ACCESSORY LOBE OF THE AZYGOS VEIN

By E. E. Atkin, M.B. Camb.

DIRECTOR OF THE PATHOLOGICAL DEPARTMENT, HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, BROMPTON, LONDON

Although radiology has taught us that the congenital anomaly known as the accessory lobe of the azygos vein is not a great rarity, it is extremely seldom that one has the good fortune to obtain a specimen for the museum. An opportunity, however, has recently occurred in the post-mortem room of this hospital, and since the radiogram of the abnormality taken during life is also available it seems well worth recording. The patient was a man aged 60 who died from bronchial carcinoma of the opposite side. Fig. 2 shows the accessory lobe in situ with the fold of parietal pleura protruding from the fissure separating it from the right upper lobe. In Fig. 3 the accessory lobe has been drawn aside in order to show the disposition of the double fold of parietal pleura. The free border of the latter can just be seen with the cut end of the vena azygos major in which a probe has been inserted. There are slight adhesions to the apex of the upper lobe. Fig. 4 is a back view of the same.

The abnormality was first noticed by the anatomist Wrisberg, and curiously enough his case exhibited accessory lobes of the same type in the upper lobes of both right and left lungs. Since then the bilateral anomaly appears only to have been reported once. M. Dévé [1] gave the first hint of the accepted explanation of its ætiology. A clear detailed description was given a short time ago by H. P. Nelson and G. Simon,[2] so that it will suffice here to recall the salient points. Owing to an abnormal position of one or other of the relevant structures in fœtal life, the azygos vein with its attendant fold of parietal pleura cuts a deep fissure in the right upper lobe during development.

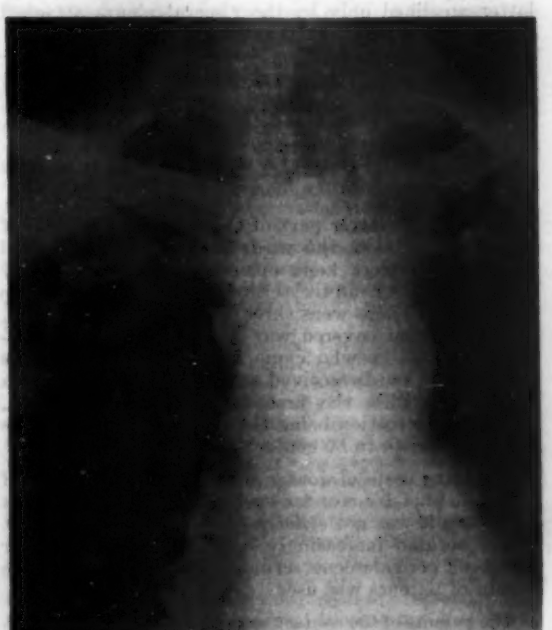

FIG. 1.—A negative radiogram showing the comma-shaped shadow, at the apex of the right lung, cast by the accessory lobe.

The essential feature of this accessory lobe of the azygos vein is that a *double layer of parietal pleura* with the azygos vein in its free border dips down to the bottom of the fissure which separates it from the

[1] Bull. et mém. Soc. Anat. de Paris, 1899, lxxiv., 489.
[2] Brit. Med. Jour., 1931, i., 9.

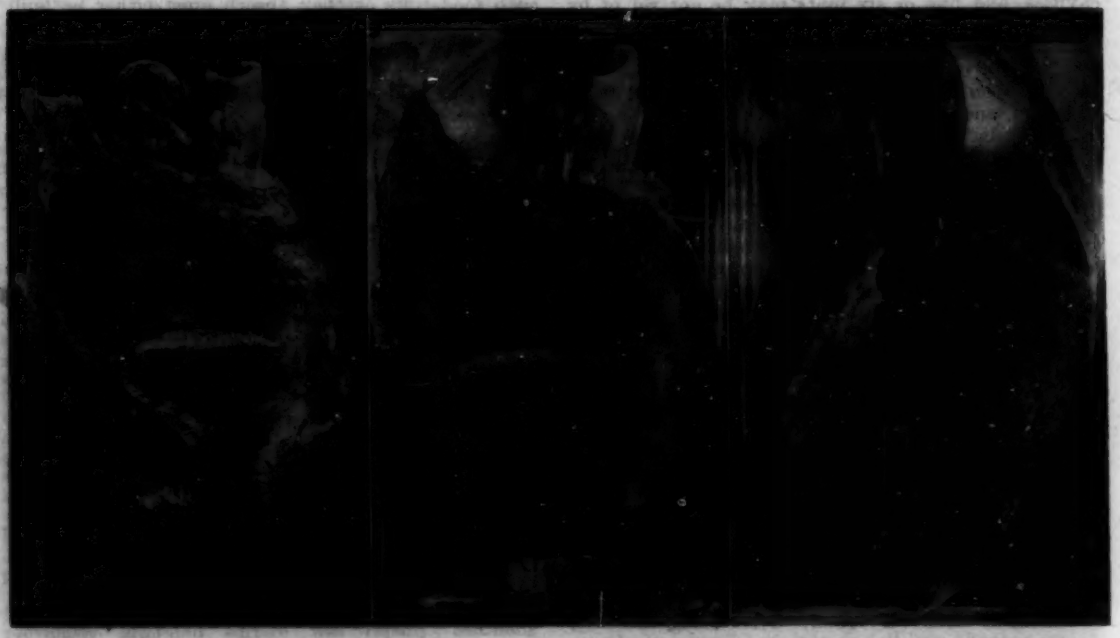

FIG. 2.—Accessory lobe of the azygos vein, in situ.

FIG. 3.—Accessory lobe retracted to show the fold of parietal pleura and the vena azygos major.

FIG. 4.—A back view of the accessory lobe.

rest of the upper lobe. This pleural fold has been aptly termed the meso-azygos. The abnormality, therefore, is sharply marked off from other supernumerary fissures which occur in the lung, since the latter are lined only by the visceral pleura attached to the lung.

The characteristic radiological image is now too well known to need description. That of the present case will be seen in Fig. 1.

I am indebted to Dr. R. W. Rawlinson for permission to use the radiogram and to Mr. G. Siddall for the negative print of it.

CONTROL OF MEASLES

By G. Hale, M.B. Camb.

LATE HOUSE PHYSICIAN TO THE VICTORIA HOSPITAL FOR CHILDREN, LONDON

During the latter part of the biennial epidemic of measles in 1931–32, the wards of the Victoria Hospital for Children were kept open by the use of either convalescent or adult serum, whichever could be obtained. There were three wards each of 18 beds, and the period covered was February to July. Susceptible children who came in contact with measles while in the wards received an intramuscular injection of serum within the first five days of incubation, complete protection being the objective. Susceptible children known to be contacts were not admitted.

A sliding scale of dosage was used—a minimum of 5 c.cm., plus 1 c.cm. for each year of life—but in a few cases it was not strictly followed. As time went on it became increasingly difficult to obtain either adult or convalescent serum, and in two cases the serum of parents was used.

The parents of the contact were sent for and the position was explained to them. If they had had measles about 50 c.cm. of blood was withdrawn from one of them, and as soon as the serum had separated from the clot an injection was given to the child. In deciding whether to take blood from one parent rather than the other, preference was given to the one who had had the more recent attack. If he or she had had two or more attacks this was taken as a sign of poor immunity. General physical fitness was taken into account, and other things being equal the

Convalescent Measles Serum

Date in 1932.	Sex.	Age.	Dose in c.cm.	Day of Inc.	Result.
March 19	M.	9 yrs.	10	4	Protected.
May 6	M.	3 ,,	8	5	,,
,,	F.	6 ,,	11	5	,,
,,	F.	6 ,,	11	5	,,
,,	M.	2 mos.	5	5	,,
,,	F.	20 ,,	5	5	,,
,,	M.	3 ,,	5	5	,,
,, 14	M.	21 ,,	5	2	Measles developed after discharge on May 31; attack said not to be severe.
,, 18	F.	11 ,,	3	2	Protected.

Adult Measles Serum

April 20	M.	9 yrs.	13	4	Protected. Had had 10 c.cm. convalescent serum on March 19.
,,	F.	5 ,,	11	4	Died of T.B. meningitis April 23.
,,	F.	5 ,,	10	4	Protected.
,,	M.	7 wks.	5	4	,,
,,	M.	5 mos.	5	4	,,
,,	F.	11 yrs.	16	4	,,
,,	F.	4 ,,	9	4	,,
,,	F.	ks.	5	4	Died of congenital syphilis April 21.
,,	F.	7 yrs.	12	4	Protected.
,,	F.	4 ,,	5	4	,,
,,	F.	18 mos.	5	4	Developed measles May 2. Rash and fever only lasted 24 hours. No Koplik's spots.

Parental Measles Serum

May 14	F.	2 yrs.	10	2	Protected. Pertussis, May 29.
,,	F.	4 ,,	15	2	Measles May 16 (note date). Fever lasted 3 days; some bronchitis.

Inc. = incubation.

younger parent was preferred. No Wassermann or other test was performed, but it was explained that syphilis contracted after the birth of the child might be transmitted by the injection. If any parental serum was left after the child had had the injection, a Wassermann test was done and it was put into ampoules for later use. In the two cases treated, the dosage used was as then advised by the public health department of the London County Council. Up to the age of three years it was 10 c.cm.; from three years onwards the number of cubic centimetres to be given was calculated by multiplying the age, in years, by four.

There seems to be no reason, in the ordinary way, why parental serum should differ at all from mixed adult serum; though presumably the results are not likely to be so uniformly good.

The value of protecting susceptible cases in hospital from measles is obvious from the accompanying Table, and the method is widely practised. The principal objections to its application in private practice are: (1) that few children are taken to the doctor during the incubation period; and (2) that the serum is hard to get. The first of these difficulties can only be overcome by wider knowledge of preventive medicine among the public, or conceivably by compulsory notification of all cases and the tracing of contacts. The second is really no difficulty at all, provided one of the child's parents has had measles. It should not even be necessary to prepare the serum, for a direct injection of whole blood from the parent should be quite as effective as an injection of serum, provided allowance is made for the volume of the clot in estimating the dose.

In private practice there is no object in protecting all measles contacts and leaving them susceptible again in a few weeks; but there is every reason to modify the attack by giving the injection between the sixth and the ninth day of incubation, thereby insuring against complications, severe illness, or even death.

I wish to thank Dr. R. C. Jewesbury, Dr. A. C. D. Firth, and Dr. S. Wyard for allowing me to publish the results obtained in their wards, and for their help. On behalf of the Victoria Hospital I wish also to thank Dr. D. N. Nabarro, of the Hospital for Sick Children, and Dr. H. K. Goadby, of St. Thomas's Hospital, for supplying the convalescent serum; and the public health department of the London County Council for the adult serum.

ERRATUM.—In the study last week of basal metabolism and impedance angle, by Dr. J. D. Robertson and Dr. A. T. Wilson, an unfortunate misprint occurred. The sentence in parentheses halfway down the second column, page 1158, should read: (It must be noted that in our experience cases of moderate Graves's disease often show I.A. values which are well within *normal* limits. . . .).

MEDICAL SOCIETIES

TUBERCULOSIS ASSOCIATION

FOR his presidential address to this association on Nov. 23rd Dr. L. S. T. BURRELL chose the subject of

Reinfection in Tuberculosis

We ought to be able to agree, he said, whether or not tuberculosis is infectious. A man says to the consulting physician: "My son wants to share a small flat with a friend who is consumptive and has tubercle bacilli in his sputum; shall I allow it?" Most of us would advise that there was danger, slight but none the less definite. Some authorities, however, believe that there would be no danger, for they regard the ordinary so-called adult type of pulmonary tuberculosis as a late manifestation of a previous infection, just as tabes dorsalis or aneurysm are late manifestations of syphilis. They justify this theory by citing Koch's phenomenon—i.e., the change that takes place in the body as a result of infection. When tubercle bacilli enter the body of an animal for the first time nothing happens until after some days, when a nodule appears and the corresponding lymph glands soon become enlarged. If however the bacilli enter a body that has previously been infected there is a local inflammatory reaction and general shock which may kill the animal, but if not the bacilli appear to be fixed at the site of entry where they may be destroyed. It has therefore been suggested that there is a primary tuberculosis due to the first invasion of the body by tubercle bacilli, and that if recovery takes place the body is immune to a second invasion. If this theory is correct it follows that when once an individual has been infected by tuberculosis, that is to say as soon as he reacts to tuberculin, he need take no precautions as regard contact with the so-called "open" cases of consumption. This seems to me, said Dr. Burrell, a very dangerous doctrine to preach. I suggest to you that all forms of tuberculosis after the incubation period are fundamentally the same. Imagine that on testing 1000 people with tuberculin one finds 960 reactors. They react because they have been infected. The result of a primary infection is to produce sensitivity or a state of allergy. In the overwhelming majority of cases the infection is not large enough to produce any definite symptoms and the patient becomes allergic without any sense of illness. Sometimes the dose of infection is sufficient to produce symptoms from which the patient recovers, and in a few cases it is sufficient to cause a general and fatal tuberculosis.

With this introduction, Dr. Burrell submitted and justified the following 21 articles:—

1. The human body has some degree of natural resistance to infection by tubercle bacilli.
2. This resistance is less than that of some animals and more than that of others.
3. Some individuals are more resistant than others.
4. The degree of resistance varies from time to time in the same individual.
5. Small repeated doses or a chronic lesion lead to tolerance to the tuberculous toxins.
6. A primary infection leads to a state of allergy which may be harmful if too great, but in a moderate degree produces an acquired resistance.
7. As with natural resistance the degree of acquired resistance and tolerance varies in different species and waxes and wanes in the same individual.
8. Natural resistance is strong enough to overcome an ordinary dosage of infection, so that the overwhelming majority of individuals overcome an initial infection without any clinical disease or even any signs of ill-health.
9. Acquired resistance is not nearly so important as natural resistance, so that when once the natural resistance breaks down the acquired resistance alone is rarely sufficient to check the progress of the disease. Tolerance merely prevents infection from producing toxic symptoms.
10. An important factor in acquired resistance is to fix the invasion and so to slow down its rate of spread. This tends to make tuberculosis a local disease, spreading chiefly by local extension.
11. As a result of this check, natural resistance has time to overcome those bacilli which wander from the local lesion and often to overcome the local lesion itself.
12. The change which takes place in the body some days after infection by tubercle bacilli may be compared to the change which takes place after infection by typhoid bacilli when the Widal reaction develops. If in either of these diseases one wants to speak of a primary stage, this should

be the incubation or pre-allergic period. After this brief latent period all tuberculosis is essentially the same.

13. It is wrong to apply the word primary to a tuberculous manifestation merely because it is the continuation of an original infection, and secondary because there has been a latent period between the original infection and the onset of symptoms.

14. It is not true that the individual acquires immunity to tubercle bacilli from another host but remains susceptible to those harboured in his own body.

15. In common with all infections, a slowly spreading lesion produces fibrosis and a rapidly spreading one does not.

16. Repeated small infections therefore are either overcome by the combined efforts of natural and acquired resistance, or local areas of fibrosis appear and lead to the so-called chronic fibroid type.

17. In the rare event of an overwhelming infection, endogenous or exogenous, an acute tuberculosis occurs.

18. In human beings as in animals the fatal dose has some relation to the weight of the individual. Hence a dose that would prove fatal in an infant might be resisted by an adult.

19. The site of the lesion is a matter of great importance in prognosis. If the bacilli happen to get fixed in the meninges the result is fatal; if they happen to lodge in the elbow recovery is the rule.

20. Pulmonary tuberculosis is common in adults and non-pulmonary in children because the bacilli, having reached the blood stream, must go through the lungs. In the child the passage through them is easy, whereas in the adult they meet obstruction and tend to become fixed. Children have as much resistance to tuberculosis as adults have.

21. Infantile and adult tuberculosis are fundamentally the same.

Let us not, he concluded, regard tuberculosis as a disease apart from others. Certainly it differs from them and has its own peculiarities, but it obeys the same laws of nature that apply to other infections as regards its infectivity and other poisons as regards its toxicity. Differences are a matter of degree only in this problem. A patient who expectorates sputum containing tubercle bacilli is a danger to others. If reasonable precautions are taken this danger may be so slight as to be negligible, because these precautions will prevent a contact from receiving a dose large enough to infect. A massive dose will produce an acute type of tuberculosis and repeated small infections a chronic one.

Dr. G. T. HEBERT read a paper on the

Termination of Artificial Pneumothorax

It might be argued, he said, that it was better and safer to continue a pneumothorax for a year or more beyond the time when the treatment appeared to have served its purpose; but if it was admitted that the treatment exposed the patient to certain risks and that the shorter the treatment the better would be the restoration of function in the treated lung, then there was justification for considering how soon the pneumothorax could safely be terminated. He thought, indeed, that in the past they had erred on the side of caution, and that many cases might have been terminated much sooner. In a considerable number of cases the physician had no choice—the termination was premature or unavoidable in about 50 per cent. of cases. The main reasons for forced termination were: (*a*) obliteration, usually following an effusion; (*b*) spread of disease in the better lung; (*c*) pleuro-pulmonary fistula; and (*d*) personal reasons. In an analysis of 210 cases at St. Thomas's Hospital these reasons were operative in 21, 19, 3, and 8 per cent. respectively in the "unavoidable" group. In the "optional" group, treatment was terminated in 10 per cent. in whom the object aimed at was not obtained, and in 39 per cent. in which it was attained. The possible effects to be produced by collapse were: (1) the formation of fibrous tissue; (2) the reduction of toxæmia; (3) the checking of spread of the disease; (4) the closure of soft cavities; and (5) the cessation of recurrent or of urgent hæmoptysis. He could give instances of cases in which one predominant effect was obtained by collapse, and, he thought, by collapse alone. Usually two or more of these desired effects were aimed at, and the treatment could not be considered a success unless they were obtained. When this point had been arrived at, a certain period had to be allowed for healing. The results of routine sanatorium treatment tended to show that patients who remained well for two years after the completion of the treatment did not often suffer a relapse. The period of healing should continue until it was judged that the lung in the expanded state could stand the strain of a reasonably active life. Dr. Hebert suggested that this period was only in exceptional cases less than one year; that it took from one to two years in the type of case most suitable for the treatment; and that collapse should be maintained for more than two years in severe cases, the severest requiring perhaps permanent collapse. But the period of healing depended mainly on the rate at which the desired effect was obtained and the type of lesion to be treated. The blood sedimentation-rate was a useful factor in assessing the progress of healing; it should preferably have been normal for at least six months before treatment was terminated. When the desired effect was not obtained after a reasonable trial, the treatment should be stopped. This applied particularly to those cases where a cavity could not be collapsed, where intractable adhesions prevented adequate relaxation of the lung, or where toxæmia persisted. In such cases the treatment might actually be harmful, and the sooner it was abandoned the better.

MEDICAL SOCIETY OF LONDON

AT a meeting of this society on Nov. 26th, with Lord HORDER, the president, in the chair, a discussion on the value of accessory methods in the

Diagnosis of Intracranial Tumours and Allied Conditions

was opened by Mr. HUGH CAIRNS. These methods he classified as: examination of the cerebro-spinal fluid for pressure; histology and chemistry; radiological examination; ventriculography and encephalography; ventricular estimation; cerebral endography, by means of iodoventriculography or exploratory brain puncture; electrical resistance methods; and other methods. He stressed the importance of regarding all accessory methods as adjuncts to the clinical investigation; their value, he said, depended on the assiduity with which clinical study was pursued. Of lumbar puncture he merely inquired whether it was dangerous, and suggested that its chief danger lay in the habit of taking too much fluid. He showed a few slides of the appearances which could be obtained by plain radiography, and passed on to consider ventriculography, by which air was introduced into the ventricles in order that their inflated shape might indicate the position of the tumour. The air had formerly been introduced through the spinal column, but the method now in use was to make small burr-holes in the skull and introduce it through needles. Mr. Cairns showed several radiograms of the normal skull to illustrate the symmetrical manner in which the ventricles were inflated. Good pictures

could, he said, be obtained by the introduction of 50–70 c.cm. of air, without distressing the patient. In a large series of slides of pathological cases he demonstrated the infinite vagaries brought about in the shape of the inflated ventricles by tumours of various kinds and in various positions. Almost every tumour, he explained, caused some deformity. Tumours in the neighbourhood of the ventricles would produce deformities of their surface, and tumours in the cerebral hemispheres would bring about a great displacement of the lateral ventricles to the opposite side. The position of the septum pellucidum was particularly important, and the neurologist relied above all on the antero-posterior view. The appearance of veins and markings sometimes assisted, for the position of the tumour was not always obvious from the difference it made to the walls of the ventricles—e.g., partial obstruction due to swelling of a callosal gyrus might dilate a ventricle. It was usual for a certain amount of air to pass from one lateral ventricle to the other. In one unusual case where no air had passed from right to left, there had been a tumour of the septum pellicidum and adjacent parts, bulging up between the ventricles. Blockage of air might be caused by an obstruction of the foramen of Munro on the opposite side or by a tumour of the third ventricle blocking both foramina of Munro. It was sometimes possible to distinguish the state of affairs by means of a stereoscopic picture. A foramen blocked to air might be patent to fluid. A considerable gap instead of the usual thin line between the lateral ventricles might be due to a tumour of the corpus callosum and a hemisphere pressing down between them. The method was especially useful for tumours of the third ventricle, the diagnosis of which was very difficult from localising signs.

In conclusion, Mr. Cairns said that the limitations of the method were that it would not always show diffused tumours such as gliomatosis or sarcomatosis, though it would show nearly every operable tumour. Non-surgical lesions, such as those of encephalitis, would sometimes produce deformity of the ventricles. Moreover, the method would not give the pathological diagnosis. Its advantages were that it saved operative exploration in a number of cases with tumours and gave more information. It had its uses in the post-operative period, as for detecting remains of an incompletely removed growth. It had its dangers, for, although air could be safely injected into a normal skull, a brain with a tumour was sometimes vulnerable. The chief danger was in the general reaction. If untoward symptoms occurred, the air should be released and operation performed immediately; the radiography should be done early in the morning and the operation performed as soon as plates had been read. Ventricular estimation was carried out as a routine in his hospital in every case, and its results often corrected those of ventriculography.

A critical examination of the value of various methods used on Mr. Cairns's 1933 material had shown major operations for intracranial tumour in 129 cases; air injection in 42; ventricular estimation in 27; and an arteriogram in 1. Diagnosis had therefore been checked in something like 68 cases. The tumour had been wholly or partly removed in 94 cases. In 11 other cases the lesion had been identified but no histological material had been taken. During the year there had been four gross mistakes in diagnosis. The tumour could have been correctly localised by clinical methods alone in 105 of the cases. In 20 the clinical examination had not given a certain localising diagnosis; in 4 it had given a wrong localising diagnosis. Radiological examination had provided crucial diagnostic evidence in 3 cases and important confirmatory evidence in others, and false localising signs in 3. Air injection had been the main factor in 15 and ventricular estimation in 5 cases. The next important step was to provide pathological diagnosis. The future lay in more careful clinical examination and further experience.

Dr. J. G. GREENFIELD, describing the results of examination of the cerebro-spinal fluid in cerebral tumours and abscesses, said he had been struck by the great variations from the typical findings in cerebral tumours. These, however, were not sharply enough defined for the practical requirements of the general doctor and consultant. The only points necessary to examination were pressure, appearance, cells, and total protein. The typical syndrome of cerebral tumour consisted in increase of pressure without increase of cells. Accurate estimation must be made with a manometer and the pressure must be reduced very quickly and only to a limited extent. The very fine needle used was removed when the pressure had fallen to about two-thirds of the original. The normal mean was about 130 mm., and pressures above 200 mm. were definitely abnormal and might quickly rise to over 300 mm. They were often found before any evidence of papilloedema, headache, or vomiting. Normal pressures might be found with cerebral tumours and abscesses and in subdural hæmatomas, for a tumour might find quite a large amount of room vacant for its growth before it caused overcrowding, and secondary cancers, degenerating gliomas, and tuberculomas of the cerebral hemispheres might destroy almost as much brain tissue as the space they occupied. Cerebral tumours as a rule produced no increase of cells, with the exception of gliomas, especially degenerating glioblastomas in the walls of the lateral ventricles. These sometimes produced cells in large numbers with a significant proportion of polymorphonuclears, which might make the fluid turbid and suggest a diagnosis of abscess. The other exception was cancer of the posterior fossa, where actual tumour cells might be found in addition to other cells. Primary tumours of the cerebellum or of the VIIIth nerve, on the other hand, did not produce an excess of cells. Excess of protein was found in VIIIth nerve tumours and cancers of the posterior fossa, but not in slow-growing cerebellar gliomas and gliomatous cysts, or angiomatous cysts of the cerebellum. It might be unwise to operate when yellow, highly proteinous fluid was found, but with a lesser degree of excess it would be unwise to draw any conclusion.

Dr. M. H. JUPE emphasised the necessity for combining all the methods. In showing examples of routine radiograms, he dealt particularly with the meningiomas, which exacted most work and for which the surgeon was most likely to turn to the radiologist for help. Open sutures, he demonstrated, sometimes showed a general rise of pressure. Meningiomas were extraordinarily interesting and complex, because they caused so many different types of evidence. Some of them calcified; some caused hyperostosis, some destruction and some a combination of both, and some were betrayed by a dilatation of the vessels.

Dr. IGNATIUS OLJENICK (Amsterdam) then spoke of ventricular estimation, which had been introduced in order to reduce as far as possible the mortality from the older methods. The ventricles were punctured through burr-holes and the fluid from the two sides was examined chemically and microscopically, and the pressure on the two sides measured by a manometer. Symmetrical conditions in the two

lateral ventricles meant that the obstruction must be in the medium part of the system. Asymmetry denoted that the tumour was not in the third or fourth ventricle, nor in one of the cerebellar lobes, so that the old mistake of confusing a left frontal with a right cerebellar tumour was obviated. Another advantage of the double puncture was that in many cases it was impossible to reduce the intercranial pressure before opening up the dura, where the anterior horn could not be found at the site of operation. With a contralateral burr-hole, it was possible to reduce the pressure without injecting saline. The lesions which presented most danger were those of the temporal lobe, because there was no falx cerebri to act as a buffer to prevent a cerebral shift, with consequent damage to neighbouring tissue. Ventriculography was followed up immediately by operation.

Dr. C. P. SYMONDS remarked that the work had opened up not only a new avenue of treatment but new powers of location. Neurologists owed much to surgeons and had more to learn from them.

Mr. JULIAN TAYLOR showed slides of characteristic annular shadows, one of which had been the sign of an aneurysm of the carotid artery, and the other of an endothelioma on the left side of the brain.

Mr. CAIRNS, in reply, recalled that Gowers, writing in 1893, had doubted whether a patient could ever survive the removal of a brain tumour. He looked forward to means of separating operable from inoperable tumours.

GEE'S DISEASE.—In the discussion on this subject reported in our last issue Dr. Edward Harvey is incorrectly credited with a statement that rabbits put on a diet of rice developed many of the symptoms of cœliac disease. Dr. Harvey informs us that Sir Robert McCarrison's observations, to which he referred, were made on monkeys and pigeons, not rabbits.

MEDICINE AND THE LAW

Obstructing a Coroner

THERE was a conviction last week at Manchester assizes on the unusual charge of obstructing a coroner in the execution of his duties. Arthur Mason was charged with the murder of his daughter who was 2½ months old. His wife, also charged, had died in gaol while awaiting her trial. The child had been born in hospital; there was evidence that the mother, when she came home afterwards, was not strong enough to nurse it and that she spoke of sending it to a home. The mother suffered from tuberculosis and the child was weakly. Mason's account of the case was that, when the child disappeared, he thought it had been sent to a home; later he discovered the remains of the body under the bed and his wife told him she had burnt some of it. She begged him not to tell anyone and after a few minutes he put the body on the fire. Dr. William Susman, lecturer in morbid anatomy at Manchester University, described fragments of bones produced in court as those of a human infant. He showed the jury certain cuts on the tibia; all the cuts, he said, had been made at the same time; only a saw could have made them; a saw produced in court fitted the cuts. He definitely stated that the cuts had been made when the child was alive. The judge told the jury that a barbarous and wicked murder had been committed and that the possible culprits had been reduced to two, Mason and his dead wife. Mason was found not guilty of murder but was tried again next day on the charge of obstructing the coroner by preventing him from holding an inquest. He pleaded guilty. The judge passed a nominal sentence of imprisonment, which meant that Mason was forthwith released. The court took the view that Mason had been obliged to choose between giving his wife up for trial on what might be a charge of murder and on the other hand doing what he could to shield her from discovery.

The best-known cases of obstructing a coroner are those of Price and of Stephenson, both cases of burning a body and both tried in 1884. A trial for the same offence, where the body of an infant was not burnt but was thrust into a hedge, ended in the quashing of the prisoners' convictions in the Court of Criminal Appeal in May, 1933 (R. *v.* Purcy); it was not clear in that case that there had been any necessity for a coroner to hold an inquest on the body, the child having died from natural causes though there was a suggestion of neglect.

Error in Dispensing Prescription

At an inquest at Sutton upon the death of a patient for whom his medical attendant had prescribed tincture of opium, it appeared that the dispenser had misread a drachm as an ounce in making up the medicine. The practitioner, in giving evidence, said that in no circumstances would he prescribe more than one drachm for one patient. The dispenser stated that it had not occurred to him to refer to the doctor on reading the item as one ounce inasmuch as he did not know whether the prescription was for one person or more. The coroner suggested that all doctors should take special care when writing amounts in prescriptions, an exhortation with which nobody will quarrel. He also suggested that dispensers should keep in touch with the doctors they serve in any case where there was the slightest cause for doubt about the items of a prescription. This too is sound advice, especially in these times when telephonic communication facilitates prompt verification. The lay public has been known to suspect that the medical profession deliberately adopts an undecipherable script in order to prevent the disclosure of esoteric mysteries. The instances of serious failure on the part of a dispenser to decipher a prescription are nevertheless rare. In the case at Sutton the doctor was asked if his handwriting had been questioned before; he admitted the fact. This, if known, would seem to put the dispenser all the more upon inquiry. It is a prima facie inference that medicine is prescribed for one patient rather than for a whole household.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A course in chest diseases will be held at the Brompton Hospital on Wednesdays and Fridays from Dec. 12th to Jan. 11th (excluding Christmas week) at 5 P.M. Courses for the new year are being arranged as follows: cardiology at the National Hospital for Diseases of the Heart, Jan. 14th to 25th: urology at St. Peter's, Jan. 21st to Feb. 2nd; a week-end course in diseases of the heart and lungs at the Royal Chest Hospital, Jan. 19th and 20th; a course in manipulative surgery, Jan. 29th to Feb. 1st; a series of surgical tutorial classes on Tuesday and Thursday evenings at the National Temperance Hospital; and a series of demonstrations at the Wellcome Museum of Medical Science on Thursday afternoons. Full details of all these courses which, except the cardiology course, are open only to members and associates of the fellowship, will be available shortly from the Secretary of the fellowship, 1, Wimpole-street, W.1.

REVIEWS AND NOTICES OF BOOKS

1. Clinical Toxicology

By ERICH LESCHKE, Professor of Internal Medicine in the University of Berlin. Translated by C. P. STEWART, M.Sc., Ph.D., and O. DORRER, Ph.D. London: J. and A. Churchill. 1934. Pp. 346. 15*s*.

2. Industrial Toxicology

By ALICE HAMILTON, M.D. New York and London: Harper Brothers. 1934. Pp. 352. 12*s*. 6*d*.

3. Handbook of Medical Jurisprudence and Toxicology

Seventh edition. By WILLIAM A. BREND, M.A., M.D., B.Sc., Lecturer on Forensic Medicine, Charing Cross Hospital. London: Charles Griffin and Co., Ltd. 1934. Pp. 325. 10*s*. 6*d*.

1. MOST works on toxicology published in England or America are written by experts in medical jurisprudence or pharmacology whose occupations debar them from the actual treatment of cases. The practical inexperience of the authors is probably one of the reasons for the lack of general knowledge in the profession about the treatment of acute poisoning. This manual is therefore refreshing in that it is written by a clinician with the definite aim of helping the practising doctor. This aim is in the main fulfilled, though some of the common failings of textbooks on toxicology—for example, the omission of a description of the technique of the stomach washout—are not repaired. Prof. Leschke's preference for Silvester's method of artificial respiration is hard to understand; the prone position of Schäfer's method and its greater efficiency and ease of performance make it in the opinion of most experts unquestionably superior to Silvester's method. An interesting point is the author's high opinion of coramine as the best stimulant in cases of poisoning producing coma. He advises doses of 5 to 15 c.cm. administered intravenously. This view is opposed to that of American authorities, such as Haggard and Greenberg, and many French writers, who pin their faith to large doses of strychnine. For strychnine poisoning Prof. Leschke recommends intravenous injection of pernocton as the most effective procedure; this drug is certainly most valuable in controlling violent delirium and mania from various causes. Prof. Leschke's work is an important addition to the literature of toxicology and its translation is well done.

2. Dr. Hamilton's long experience of industrial toxicology gives authority to this work and to her plea for more attention to its preventive aspects. She states with vigour the duty of the State, the employer, and the physician alike to protect the health of workers in the poisonous trades, since the knowledge to enable them to do so is available. Her book should be studied especially by medical officers of health. The paramount danger—from the inhalation of poison in contaminated air—is registered in the pertinent observation that the great majority of the industrial poisons enter the body with the inspired air, and that while a workman eats only three times a day he breathes 16 times a minute. The principal causes of poisoning in industry are considered in turn. Dr. Hamilton states the facts known about each particular hazard concisely and clearly. In the bibliography 655 references are quoted, all being relevant indeed for proper documentation. In regard to carbon monoxide poisoning Dr. Hamilton has much to say that is probably new to the unspecialised reader. Apparently 0·04 per cent. breathed for several hours causes malaise; 0·1 per cent. causes 50 per cent. saturation of blood in 15 minutes; 1 per cent. causes immediate unconsciousness. The multiple opportunities for gassing in modern life are shown by the fact that illuminating gas, coal gas, smoke from blast-furnace stacks, and fumes following dynamite explosion all contain 20–40 per cent. CO, and that exhaust gas from motor-cars averages 7 per cent. CO. It is time that the widespread occurrence of this asphyxiant and its menace to well-being and life should be more generally realised. The monograph is a valuable contribution to the literature of toxicology and public health.

3. In the seventh edition of Dr. Brend's well-known handbook the chief changes relate to new Acts. The Mental Treatment Act, the Dangerous Drugs Act, and the Pharmacy and Poisons Act are adequately considered in so far as their provisions affect medical practitioners. The second part of the book is devoted to toxicology and follows the same pattern as did previous editions. Here again a full description of the procedure of gastric lavage would have been valuable. It is unsafe to assume that students know how to perform a stomach wash-out. Many lives must be lost every year in cases of poisoning through gastric lavage being attempted without precautions in unconscious patients whose cough reflex is abolished. An exact description of the proper position of the patient under such circumstances should figure in all elementary expositions of the therapeutic aspects of toxicology. A full account of Schäfer's method of artificial respiration might also be incorporated with advantage. The statistical tables of deaths by poisoning show that carbon monoxide outnumbers all the other poisons combined as a cause of death. Yet treatment of carbon monoxide poisoning is dismissed in six lines. On the whole, however, the book may be strongly recommended as a compact presentation of the important aspects of medical jurisprudence and toxicology.

Introduction to Physiological Chemistry

Third edition. By MEYER BODANSKY, Ph.D., Director of Laboratories, John Sealey Hospital, Galveston; and Professor of Pathological Chemistry, University of Texas. New York: John Wiley and Sons, Inc.; London: Chapman and Hall Ltd. 1934. Pp. 662. 25*s*.

Prof. Meyer Bodansky's book ranks as one of the most complete introductions to the subject of biochemistry as a whole that has been published, and it has deserved its remarkable success. In this edition the whole of the subject matter has been brought up to date and certain additions have been made, particularly in the sections on enzymes, the metabolism of muscle, vitamins, and the hormones. Good as is the chapter last named, a more detailed discussion would have been welcome; the description of the sex hormones is not up to the standard of the rest of the work, and might almost be called too American in outlook. For example, the mass of continental work on the male sex hormone is barely referred to, and the various factors leading to the adoption of

the present formula for the œstrus-producing hormone are not given clearly. Some reference should surely have been made to the large number of œstrus-producing substances occurring in the urine of the pregnant mare, and also to the recent synthetic work in this field. The anterior lobe of the pituitary is dismissed in a mere two pages, one of which is devoted to a description of acromegaly and gigantism, and there is only a passing reference to the recent work on the thyrotropic, adrenotropic, and other stimulating hormones from this lobe. The work of Collip and his co-workers on the conception of antihormones should at least have been mentioned.

In some respects the chapter on vitamins is also disappointing; for example, greater stress might have been laid on the relationship between the flavine group and vitamin B_2. It is, of course, easy to pick out flaws in any comprehensive work, and these are indicated only in the hope that these sections may be expanded in his next edition. Prof. Bodansky has supplied one of the finest text-books on biochemistry in the English language, and all who wish to obtain a thorough knowledge of the subject should buy and study it.

1. The Mothercraft Manual

Ninth edition. By MABEL LIDDIARD, S.R.N., Matron, Mothercraft Training Society. London: J. and A. Churchill Ltd. 1934. Pp. 195. 3*s*. 6*d*.

2. Mothercraft

By M. TRUBY KING. Sydney and Melbourne: Whitcombe and Tombs Ltd.; London: Simpkin Marshall Ltd. Pp. 252. 3*s*. 6*d*.

1. THIS manual continues to be a best seller. In small compass Miss Liddiard has contrived to present the whole art of bringing up a baby on the lines laid down by Sir Truby King and practised under her own direction as matron of the Mothercraft Training Society. The chapters on natural and artificial feeding deserve special mention for their detailed instructions and carefully prepared tables both for feeding and weaning. Disciples of Dr. H. K. Waller, who allows his babies to hold and bite at a piece of beef-steak at nine months, may, however, question whether the manual does not keep the child rather too long on a babyish régime, no meat being included until the age of two years. Miss Liddiard's directions for the management of premature infants combine scrupulous care with an absence of fussiness which is wholly commendable. In fact a feature of the whole book is its cheerful and optimistic tone. A short section on the older child contains useful hints, and a miscellaneous chapter deals helpfully with various matters such as the feeding of twins, children in the tropics, on a sea voyage and on a railway journey, and the right way to plan a family holiday. The alterations and additions in this edition have mostly been suggested by readers.

2. Miss Truby King has written this book in order to provide mothers and nurses with an inexpensive and up-to-date handbook on the rearing of children by her father's methods. She writes from the Australian Mothercraft Society, and is addressing herself to women who enjoy some leisure, for they are told: "Take at least half an hour's rest with the feet up after each meal, and whenever you feel tired," and one of the reasons given for advising mothers to be delivered in a hospital or maternity home is that "a hospital confinement relieves the mother of all household cares." In this country it is the weight of household cares which prevents many women from availing themselves of institutional provision. The Truby King system of child management is set out in considerable detail, and the print is good, though rather overloaded with heavy type.

The Diabetic Life

Eighth edition. By R. D. LAWRENCE, M.A., M.D., F.R.C.P. Lond., Physician in charge Diabetic Department, King's College Hospital; late Chemical Pathologist and Lecturer in Chemical Pathology, King's College Hospital. London: J. and A. Churchill. 1934. Pp. 224. 8*s*. 6*d*.

ONLY a year has elapsed since the last edition of this book was published. Little change has been made in the text, but the advice on the amount of carbohydrate to be allowed to the diabetic has been altered. Dr. Lawrence has now increased the carbohydrate ration, but regards 150 g. as the maximum; he does not favour very high carbohydrate values of 200–400 g. used by some workers. An announcement is made in the preface that a diabetic association has been formed in this country to look after the personal and social interests of diabetics and to promote new research on the disease, and the hope is expressed that all readers of the book will join the association.

Practical Histology

For Medical Students. Third edition. By D. T. HARRIS, M.D., D.Sc., F.Inst.P., Professor of Physiology, London Hospital Medical College. London: H. K. Lewis and Co., Ltd. 1934. Pp. 36. 7*s*. 6*d*.

THIS is a very useful laboratory manual, and contains just that miscellaneous assortment of information which is of use in everyday histological routine. It is not in any sense a text-book, explaining in detail neither histological technique, nor the microscopic appearance of tissues. On the other hand, most ordinary, and a few special, histological methods are given in note form—Prof. Harris is a master of the art of compression—so that the successive steps are clearly seen. These explicit directions, so rare in the more dignified kind of treatise, are of inestimable value to the student and to others who only occasionally have occasion to make histological preparations. The book consists of about 200 numbered paragraphs, most of which refer to particular preparations. The main features of these are again indicated in note form, so that the student can draw what he sees through the microscope, and understand what he is looking at and the purpose of the slide. There are only two plates, one showing the blood-cells in colour, and the other photographs of embryonic sections; the student therefore learns from his own preparation and not from illustrations; there are also one or two useful line drawings illustrating methods. The print is on one side of the page only, and every alternate leaf is blank for drawing, so that there are three unnumbered pages for the student's use to every one of instructions. Unfortunately, the first of these is not entirely blank, being inscribed with six circles, presumably intended to represent the microscopic field. This idea has its points for those persons who never know where to start with a drawing, but will induce a kind of claustrophobia in the artistically minded. Apart from this, the volume is attractive and will doubtless prove as useful as its predecessors.

THE LANCET

LONDON: SATURDAY, DECEMBER 1, 1934

TREATMENT OF SEPTICÆMIA

THE fatality-rate in septicæmia, and especially in streptococcal septicæmia, is known to be very high. Statistics cannot take into account important variables such as the type of organism, the site of its entry, and the condition of the patient at the time of infection. It appears, however, that the risk of death is of the order of 70 per cent. or more. Faced with this risk, it is urgently necessary to give conscientious consideration to every suggested means of treatment; and the analysis of results in 100 cases which has been made by Prof. F. T. CADHAM,[1] of the University of Manitoba, will be studied with corresponding interest. Treatment, naturally, is dependent on diagnosis; and the treatment of septicæmia by any method depends on its early recognition. Blood cultures provide the only certain means of diagnosing septicæmia, but sometimes unfortunately they fail to grow an organism which is certainly in circulation. The failure is probably due to errors in technique, and since SCHOTTMULLER in 1910 first described the anaerobic streptococcus, it has become increasingly clear that anaerobic culture is necessary if the bacteriologist is to play his proper part. Last year Dr. LEONARD COLEBROOK and Dr. RONALD HARE,[2] at Queen Charlotte's Hospital, reported 62 cases of puerperal infection with these organisms, and offered many useful suggestions for the isolation of such strains. At the same time the volume of blood taken by them might well be increased. They recommended 4 c.cm. inoculated in volumes of 2 c.cm.—that is to say, two separate cultures; since, however, circulating organisms are often scarce, 20 c.cm. inoculated in 5 c.cm. volumes is to be preferred. These two workers were naturally occupied with puerperal strains, and it may be recalled that Dr. ELIZABETH WHITE,[3] working at the same hospital, expressed her belief that the anaerobic strains were confined to the genital tract and caused autogenous infection. Anaerobic streptococci are not, however, found in puerperal infections alone; indeed they have been recovered in cases of bacterial endocarditis in men. It is essential therefore to include anaerobic culture in all cases of suspected septicæmia—particularly as the aerobic strains often grow equally well, if not better, under anaerobic conditions.

The method used by Prof. CADHAM is twofold: the patient receives the serum of an immunised rabbit and also serum from normal human beings. The method of preparing the rabbit's serum is especially interesting. Vaccines of dead streptococci and staphylococci from cases of septicæmia are injected into rabbits from the age of six months until they die. Blood is first withdrawn from the animals when they are two years old, and before this is done the rabbit is injected with a vaccine of the infecting organism of the actual patient to be treated; 10 c.cm. of blood is taken from the heart with a needle, and the serum is injected into the patient. The human serum is taken from a compatible donor; 100 c.cm. of blood is removed at a time, and from four to ten doses of the serum obtained from this quantity are given on alternate days. It is not clear why serum is preferred to whole blood, but perhaps the slight lessening of the volume to be injected is held to be advantageous.

In our issue of March 10th, 1934, appeared a paper by Dr. P. LAZARUS-BARLOW and Dr. L. P. BLAYNEY CHAMBERLAIN reporting 12 cases of septicæmia treated with fresh human serum. Their rationale was identical with CADHAM'S, both being based on the known deficiency of complement in sufferers from this condition. Their small series included only three deaths—a mortality of 25 per cent.—and CADHAM'S series is even more striking, showing a mortality of 10·5 per cent. in 95 cases. Nowadays transfusion in some form or other is widely advocated and in early cases of septicæmia its use is or should be universal, whether we accept the technique of Prof. CADHAM and administer the serum often, in small doses, or give whole blood less often. In late cases, with abscesses, transfusion is required to combat the anæmia, but where there is dilatation of the right heart, in highly febrile cases in the second week, normal whole-blood transfusion is often dangerous. In such cases CADHAM'S technique, wherein small volumes are transfused, is a useful compromise; indeed it is almost the only course left open. The hyperimmunised rabbit's serum is an interesting innovation, but the two years' course of vaccines naturally implies a longish interval before its value can be assessed. It is probably based on a theory of bactericidal action, since little if any antitoxic value could be expected. The effect of meningococcal serum, however, does not depend, so far as is known, on any antitoxic property, and pneumococcal antisera are not wholly antitoxic, since the pneumococcal toxin is not potent. The simultaneous use of two methods makes it difficult to apportion the credit for Prof. CADHAM'S success, and in this country few physicians would yet venture to omit antitoxic serum in streptococcal septicæmia. It is perhaps a pity that the antitoxic sera in use are usually made by injecting toxin alone into horses, whereas the "polyvalent sera" are prepared by injecting vaccines. There is no reason why horses should not be immunised by both processes, but before this is done, more definite information is required about the theoretical basis of CADHAM'S rabbit-serum treatment. The successes claimed are so great that a strong case can be made for an

[1] Amer. Jour. Med. Sci., October, 1934, p. 542; see also THE LANCET, 1934, i., 867.
[2] Jour. Obst. and Gyn. Brit. Emp., 1933, xl., 609.
[3] Ibid., p. 630.

extensive trial of his methods—especially at a time when maternal mortality, largely from streptococcal septicæmia, shows no sign of abating.

THE FIVE-DAY WEEK

IMPROVEMENTS in the standard of living conduce directly to improved standards of health. Without doubt the mechanisation of industry has been a factor of immense importance in ameliorating social conditions, but a flow of cheap commodities produced under good working conditions must not be the only claim. Unless changes take place in the hours of work mechanisation has a boomerang effect, for it not only displaces labour but fails to stimulate the proper use of leisure. The social State of the future, and maybe the not very distant future, demands for its steady growth and solid basis some constructive planning in hours of work and in the use of leisure. Any experiment along these lines is of interest to the medical profession, for the repercussions of these things are numerous and widespread. We have before us the report [1] by Sir RICHARD REDMAYNE, who was nominated by the Ministry of Labour to investigate at the invitation of Messrs. BOOTS, of Nottingham, the working of the experimental five-day week at their works and offices. It is an interesting document on a significant experiment which has proved so successful that the company has decided to continue the new working week indefinitely. Economically the scheme is a success and from a health standpoint it has already borne good fruit. Not only are the workers fresher as a result of two complete days of rest in the week, but the young people who attend night classes are enabled to get the fresh air and exercise which otherwise they tend to lack. The change from school to work is often, as Sir GEORGE NEWMAN has pointed out, a landmark associated with a deterioration in physical standards, and if the avoidance of this deterioration were the only benefit of the shorter working week it is a very important one, for the medical officer of the company reports a beneficial effect on all workers, but especially on the young. He also anticipates even greater value from the changed hours in the winter than in the summer. The shorter working week has entailed a slight redistribution of hours, but on the whole even the total hours of work have been reduced, the offices for instance working 38 hours 20 minutes in the week. In spite of reduced hours output and service have been maintained and no reduction in wages has been made. This of course is the essence of the scheme, and the inevitable reduction in staff which would have normally followed rationalisation has been avoided.

It is not suggested that this scheme can be applied indiscriminately to all industries, but it is well worth study because when the urge to find them is strong enough ways and means can often be found. The critical position of unemployment in industry generally is a sufficient motive to forward schemes of this kind as fast as possible. It appears from the report that when this change was first suggested various sectional managers felt that it was impracticable, but the idea was pushed forward and in the result we find all the witnesses before the investigating committee stating that in actual practice what they thought to be impossible proved to be a workable proposition. This is a point worth bearing in mind. Every industry must study its own problems, but it is encouraging to know that such desirable social ends are capable of achievement without economic loss. Each such experiment is welcome and we are glad to find a pharmaceutical company which has many contacts with our own profession moving towards things that we all hold to be essential to national welfare. There are some five-day weeks in operation in other concerns—Mr. SEEBOHM ROWNTREE'S letter in Monday's *Times* tells of a reduction of hours from 48 to 44 per week in the cocoa and chocolate industry, made 18 years ago, with a five-day week; the previous loss of working hours through minor illness has been reduced without raising costs of production. Social and industrial welfare is still too often regarded as "something to be conceded if possible." But the medical profession regards social welfare as the sole justification for all economic endeavour and welcomes any evidence that modern industry is becoming alive to the responsibilities which increase with every advance in productive technique. Spontaneous developments of self-government are more healthy and more vital than reforms imposed from without. We hope to see informed and constructive criticism of this public-spirited adventure.

[1] A Review of the Experimental Working of the Five Days Week. Boots Pure Drug Co. Ltd., Nottingham. Pp. 70. 1s.

MEDICAL DEGREES IN LONDON

THE number of candidates for admission to many, if not all, the London medical schools in October proved to be far in excess of the accommodation available, while it may be recalled that last year also many applicants were rejected by the more popular schools. The onus of selection is generally left to the dean; early applicants for the most part are able to secure places if their attainments and manner promise well. Not that the choice is here easy, for it needs a prophetic eye. It is notorious that a metamorphosis can take place somewhere in the closing phase of the medical student's growth at least as wonderful as that which occurs in the life-history of the tadpole, but in an opposite direction. Instead of losing, like the tadpole, svelte elegance and acquiring a jerky gait and address, and angular limbs, and the embryo doctor sheds the outward attributes of the student, acquires the grace of the professional man, and will assume tails, at least on suitable occasions. The finished product of the medical schools, after the polish of a few months in "the house," may be hardly recognisable as the same lad who sought admission six years previously. With experience, however, deans develop a flair for detecting the student who will bring credit to their school, whether through academic achievement,

practical good sense, enthusiasm for the traditions of the place, or athletic prowess. The establishment of rigid criteria for admission is as a rule avoided; these are liable to defeat their own object, besides proving highly inconvenient when the son of a valued alumnus presents himself with a strong personal and sentimental claim for admission but lacking certain qualifications.

If the medical schools were self-supporting, either through endowment or through students' fees, the criteria of admission would be a matter of domestic policy, of no general concern. But since the heavy subsidy essential to modern medical education is paid through the University Grants Committee, the particular university to which a medical school is attached has a vital interest in maintaining the proportion of students accepted who are reading for a degree as against a diploma. The announcement in THE LANCET last week that at St. Mary's hospital, London, it is proposed from next October to admit only students reading for a degree coincided with the publication of a letter from Sir ERNEST GRAHAM-LITTLE, which shows that it is not only the admission of students without academic aspirations but also the defection of the matriculated aspirants before graduation of which complaint is made. He points out that though the University of London distributes a very large sum—this year £100,000—among its medical schools, the proportion among those students who are nominally reading for a London degree but who actually become bachelors of medicine and surgery is lamentably small. The principal reason offered by the authorities of the schools for the leakage is that owing to economic stress many students have been obliged to enter practice without the delay caused by graduation; economy of effort, however, is probably as potent a factor in the decision as economy of money. There is, of course, a pecuniary advantage in abbreviation of the non-earning period, but not as far as fees are concerned, since the examination fee for the Conjoint Board diploma is higher than that for the Final M.B., B.S. Lond. The temptation to qualify early by diploma assails both the ambitious and the average student, since the responsible work open to them as doctors offers far more valuable experience than do lectures and classes. If after qualification they decide on general practice they often feel that they will gain little by proceeding to a degree—8 letters after their name are as effective as 4—while those who aspire to specialisation and an honorary staff will anyhow have to belong to one of the Royal Colleges as a condition of election. Whatever the cause, however, the fact remains that the university is subsidising a large proportion of students who never graduate, a grievance that will not be met merely by restriction of the entry to matriculated students unless some means is found to induce them to complete the degree course. Sir ERNEST GRAHAM-LITTLE would apparently be satisfied by the raising of the second M.B. to a degree examination conferring the title of Bachelor of Medical Sciences. The objection to this compromise is that unless the curriculum in anatomy and physiology is extended, the high standard of the degrees of the University of London, of which it is justly proud, will be lowered. In any case a B.Sc. in anatomy and physiology would be a happier solution than the ad-hoc creation of a degree with an ambiguous title. But it is surely in medicine, surgery, and obstetrics rather than in anatomy and physiology that a university standard of education is desirable for doctors, and the problem is how to persuade the students that a diploma which they can take earlier, with less effort, and which has earned deserved prestige is not all that the University of London expects from students whose schools they assist. The popularity of the double diploma depends mainly on the fact that examination in the fundamental subjects can be taken separately at intervals of three months, but too many students, or their parents, yield to the lure of this convenience.

Indirect pressure could, of course, be applied to students by the reservation of the coveted resident appointments to graduates; but here a dean would find himself faced with many difficulties in maintaining a rigid rule while there are obvious objections to such a course. Accident would often find a student with undoubted clinical acumen whose reasons for not graduating have been outside his control; a student favoured by the honorary staff could not easily be refused a house appointment. One solution would be to ask for grants from the Royal Colleges to assist in the maintenance of the medical schools from which they derive their life-blood, and for the University Grants Committee to allocate the funds at their disposal in proportion to the students who graduate rather than in proportion to those admitted. That the University of London does not take a parochial view of the problem is shown by the fact that it regards with no disfavour the substantial number of students from Oxford and Cambridge who come to its schools for their clinical work, but return to their own universities to take degrees. The legitimate demand seems to be that grants designed to aid in the maintenance of a university standard of education for doctors should bear fruit in the production of university graduates, while no large graduation by students is likely, for many practical reasons, to decrease the number of diplomates of the Royal Colleges, whether in London or elsewhere.

THE eighth annual congress of the British Institute of Radiology, which incorporates the Rontgen Society, will be held at the Central Hall, Westminster, from Dec. 5th to 7th, and an exhibition of apparatus organised by the British X ray industry will be held at the same time and place. Sir Humphry Rolleston will open the congress at 2.30 P.M. on Wednesday; the Silvanus Thompson lecture will be given by Dr. H. H. Berg (Dortmund) at 5 P.M. on Thursday; and the Mackenzie Davidson lecture by Sir William Bragg, O.M., at 3 P.M. on Friday. On the same evening, at 7.45, at the Trocadero Restaurant, Mr. G. Shearer, D.Sc., the president, will take the chair at the annual dinner. Further particulars will be found in our Medical Diary.

ANNOTATIONS

COLITIS GRAVIS

CHRONIC ulceration of the colon is probably commoner than is usually supposed. Dr. Edmund I. Spriggs tells us[1] that out of 7220 consecutive admissions over a period of 18 years to the private hospital for internal diseases which he directs, 159 were reported to have frequent bloody stools. In 66 cases the bleeding came from rectal and anal lesions, in 48 cases from chronic ulceration of the bowel, in the remainder the bleeding was due to neoplasm, cirrhosis, or other causes. Late cases of ulceration of the large bowel, a not infrequent terminal complication of carcinoma, nephritis, or endocarditis, are not included in the series. Thirteen of the 48 cases of chronic ulceration followed amœbic dysentery; the others would commonly be called ulcerative colitis, but Dr. Spriggs prefers the term "colitis gravis." A statistical analysis shows little difference in the symptoms and signs of the two groups between the amœbic variety and the other. Diarrhœa was present in 11 out of 13 of the first group, in 29 out of 35 of the second; the corresponding figures for abdominal pain were 8 out of 13 and 28 out of 35. As many as 10 to 20 or even more stools may occur in the day; when so frequent they are usually composed entirely of mucus and blood, and associated in the acuter stages with a distressing precipitancy which is often initiated by a meal. Seventeen out of 48 had no physical signs in the abdomen. The loss of strength and weight was pointed out by Hale-White, whose original description of the disease in the *Guy's Hospital Reports* of 1888 gave it a status as a clinical entity. As there is so little difference clinically between the two groups, reliance has to be put on bacteriological examination for their separation. In 11 cases the *Entamœba histolytica* was found, in 2 the cysts only; in several of these there had been no suspicion of amœbic infection before the discovery was made. There is nothing to be wondered at in this because the symptoms are due not to the amœba or its products but to the ulceration of the colon to which they have given rise; thus Dr. A. F. Hurst has repeatedly stated that in his experience the colon in bacillary dysentery also manifests precisely the same appearance as in ulcerative colitis. Recent follow-up investigations at Guy's Hospital and the Birmingham General Hospital have shown a mortality of 30–40 per cent. in ulcerative colitis. Dr. Spriggs's experience is much happier. Of his 35 cases of colitis gravis he only lost 7, and 3 of these were hopeless on admission. And it is now ten years on the average since these patients were treated. One out of 13 of the amœbic cases died. Dr. Spriggs attributes this low mortality to a course of treatment which, although largely empirical, has the following outstanding principles. The diet must be sufficient to maintain strength and weight and at the same time be non-irritating to the bowel. Intestinal douches are used to remove decomposing discharges gently from the ulcerated areas. Normal saline formed the basis of most of the irrigating fluids, various astringents being added. Symptoms such as griping, sleeplessness, and secondary anæmia were duly treated. Antibacterial preparations have proved frankly disappointing at Ruthin Castle, but Dr. Spriggs admits that he did not have the opportunity of using the vaccine and serum for which Dr. J. A. Bargen of the Mayo Clinic has claimed so much. American experience, as shown by a recent symposium,[2] has not been consistent in identifying the Bargen diplo-streptococcus or in confirming the results obtained from its products. Dr. Moses Paulson, from his long experience in Baltimore, is inclined to attribute the successful treatment at Rochester more to the application of the art of medicine than to any particular therapeutic procedure. At Ruthin Castle the amœbic group was treated on the same lines as the other cases except that emetine was given in some form or other by various routes. Remarkably clear X ray photographs by Mr. O. A. Marxer demonstrate the progress of cure and the value of radiography in the examination of parts of the colon out of reach of the sigmoidoscope.

[1] Quart. Jour. Med., October, 1934, p. 549.

FRIENDS AND ENEMIES

A PSYCHOLOGICAL study by Dr. Raymond B. Cattell, psychologist to the Leicester education committee, which appears in the September issue of *Character and Personality*, is directed to the discovery of the traits of character which make men friends or enemies. The subjects of study were a group of 62 students of a rather isolated residential college. Assessments were based as the result of previous inquiry on the existence of a general character-factor "W" covering such traits as persistence, energy, tactfulness and their opposites, and of a general temperament-factor "C" displayed in qualities of cheerfulness, sociability, adaptability and their opposites. Perseveration and "fluency of association"—a quality covering rapidity of associations and spontaneity of flow of ideas—were also assessed, the estimate of each student being carried out by a committee of his fellows. While it may be objected that the method chosen is to some degree unscientific, it must be admitted that it was the only one at present open to the investigator, since intelligence is the only factor of mind which has been measured with any precision. Some of the results obtained were such as would be expected on general grounds. Popularity on the whole appears to be attached to moderate "surgency," a term covering the positive aspects of the above-mentioned factor "C"; also to very high will-character and very low perseveration. Unpopularity is associated with very high surgency, low will-character and very high perseveration. In the last-mentioned quality friends were found to be either nearly alike or else widely different. Friends of high perseverators also had a lower rating in perseveration than friends of low perseverators. Moderately low perseverators however are often leaders, representing as they do a compromise between the popularity of the low perseverators and the high will-character of the average perseverator. High perseverators had fewer friends than low, and more enemies.

Dr. Cattell's study is more interesting in itself than for any possible immediate practical application. The traits studied do not cover all qualities that attract one person to another, and friends will continue to be made on the basis of interests and opinions or through mere chance contiguity, or by a kind of intuition which may, of course, be unconsciously based upon the qualities described by Dr. Cattell. Hostility too may find its source in purely chance episodes unrelated or only slightly related to qualities of character and personality. Dr. Cattell suggests the possibility of a similar study of compatibility between husbands and wives. Doubtless there is much material for such a

[2] Jour. Amer. Med. Assoc., 1933, ii., 1687.

study—especially of incompatibility, if the daily press is to be taken as an index—but evidence of value psychologically would be difficult to obtain and certainly not reliably from the parties concerned. While various combinations of such qualities as are described may play their part in producing the sentiment which a large part of the world regards as the ideal basis for marriage, it is unlikely (to put it mildly) that prior to marriage the parties would tolerate such a psychological analysis. Public opinion, as shown in the debate last week in the House of Lords, is not yet inclined to approve any sort of medical certificate before marriage, even in the interests of eugenics.

DISTRIBUTION OF WEIL'S DISEASE

THE October issue of the *Bulletin* of the International Office of Public Health contains reports on the occurrence of Weil's disease in Germany, the United States, France, Japan, and Sweden, which were presented by representatives of these countries to the permanent committee of the Office at the April–May session. According to Prof. Reiter, the German delegate and president of the Health Office of the Reich, it is impossible to furnish exact statistics about the frequency of Weil's disease in Germany, as the disease is not notifiable in that country where only sporadic cases have been reported from time to time at Freiburg i. B., Heidelberg, Frankfort a. M., Hamburg, and Cologne. A number of German observers such as Uhlenhuth and Zimmermann, Knack, Kister, and Burgwall have reported that the disease is spread by the agency of rats in bathing places, sewers, and rivers. Dr. Hugh S. Cumming, the United States delegate, remarks that most American observers believe that there are at least two diseases, both distinctly infectious, which frequently though not invariably give rise to jaundice which is often intense. One of these diseases is caused by *Leptospira icterohæmorrhagiæ*, while the other disease or group of diseases is due not to this agent but to some other micro-organism. It has also been suggested that in the mild type of infectious jaundice the leptospira may be the causal agent, although it may not be found in the blood, secretions, or excreta. The earliest description of infectious jaundice in the United States can be traced back to the war of 1812. From that date until 1886 a total of 11 epidemics of infectious jaundice have been reported in the United States, exclusive of thousands of unclassified and doubtful cases which occurred during the war of 1861–65. Between 1886 and 1920, 51 more epidemics have been collected exclusive of the cases in the Hispano-American and world wars. In 1921 and 1922 infectious jaundice became extremely prevalent in North America, especially in New York State, where about 700 cases occurred. Both in the United States and in Latin America, where epidemics of infectious jaundice have also occurred in recent years, the mortality of the disease is low, except perhaps in pregnant women. The French report is presented by Mlle. Erben, who is in charge of Dr. Pettit's laboratory at the Institut Pasteur, Paris, and has drawn up graphs based on the examination of sera sent for the agglutination test and showing that during the period 1923–32 there was a fairly steady rise in the incidence of spirochætal jaundice in Paris and the departments without any actual epidemic. This rise was probably explained by the increased interest in the disease shown by the clinicians who sent the specimens to the laboratory. The number of fatal cases did not appear to be high and did not exceed 5 to 6 per cent. All the cases of meningeal spirochætosis on record had recovered. Dr. M. Tsurumi, the delegate of Japan, reports that Weil's disease, the causal organism of which was discovered by his fellow-countryman, Prof. Inada, is almost ubiquitous in Japan, but in its epidemic form is closely connected with agriculture, so that numerous cases occur during the period of agricultural labour from July to November, whereas there are hardly any in the winter. In most of the Japanese prefectures, in contrast with Europe and America, Weil's disease is notifiable and active preventive measures are taken in the form of destruction of rats and inoculation. The incidence of the disease varies in different years and districts. The total number of cases in Japan during 1933 was 1636 with a fatality-rate of 4·6 per cent., whereas in the Ibaraki province during the last six years there were 1327 cases with a fatality-rate ranging from 16·9 to 29·9 per cent. According to Dr. G. Olin, Weil's disease is almost unknown in Sweden, where only six cases, three of which were fatal, occurred in the course of a year and examination of 100 rats at Stockholm showed that only six were infected with the leptospira. In view of the excellent hygienic conditions prevalent in Sweden, Dr. Olin thinks that it is unlikely that Weil's disease will assume an epidemic form in his country.

TASTE AND CHEMICAL CONSTITUTION

IT is surprising how little, and at the same time how much, is known about this subject. An article by A. J. Mee in the October issue of *Science Progress* summarises the present position. The four general classes of taste are sweet, bitter, salt, and sour, and certain chemical generalisations can be made—for instance, that acids taste sour. The sourness is attributable to the hydrogen ion, but not to this alone, for the taste of hydrochloric acid is lost on dilution while its H-ion concentration is still four times that at which acetic acid can be easily detected by the tongue. Saltiness is evidently due to the anion Cl', but complications arise directly different chlorides are compared. It is evident that in simple binary compounds both ions play a part, and the resulting taste, although broadly classifiable in one of the groups mentioned, follows some law of mixing which at present is not understood. Much more semi-empirical knowledge exists with regard to organic compounds, particularly as to their quality of sweetness. Several radicles, some of them quite complicated and apparently irreducible, are known to confer sweetness under certain conditions. The chief of these is that there should be also present an auxiliary non-specific group, for example a simple hydrogen atom. It is also known that other radicles, for instance a carboxyl group, may turn sour a substance which otherwise fulfils the conditions for sweetness; whether some fusion of sensation is responsible for this, or whether the new grouping is specific, is not known. From these examples, of which many more will be found in the paper quoted, the curious state of the subject may be seen; one or two branches are systematised incompletely, it is true, yet the fundamental principles connecting chemical constitution and taste are almost unknown. But the elucidation of these might be of considerable importance. A problem which suggests itself is the reason why some animals can, apparently by taste, detect poisonous substances, while the human race is unable to do this. Another point of interest is the connexion between taste and smell; there can be little doubt that the latter has acquired in man an æsthetic importance which transcends its utility. Not only may it confuse investigations upon taste, but it suggests the possi-

bility that in sourness, sweetness, and so forth, we may be dealing with biologically false values, dictated by the criteria of pleasantness and unpleasantness instead of good and bad. One could, with difficulty, visualise a world safe for pedestrians in which sight was unimportant for self-preservation, and in which the idea of the eye as a distance receptor was quite foreign to the mentality of those carrying out research on vision. It is unfortunate that the lower animals are incapable of yielding information about their sensations; so many organs are known which have relinquished their original function and taken over a new one, that it seems highly probable that those special senses which we can do without have acquired, in the course of evolution, a fresh significance.

THE USE OF CARBON DIOXIDE IN OBSTETRICS

THE value of carbon dioxide, given with oxygen to newly born infants who need resuscitation, is well established although the practice is comparatively recent. Now we are presented with evidence [1] to show that the same gases are effective remedies for two of the most formidable complications of pregnancy, post-partum eclampsia and hæmorrhage. The case reports are impressive and demonstrate the striking results of inhalation of a mixture of 10 per cent. CO_2 with 90 per cent. oxygen by patients unconscious and convulsive. Post-partum hæmorrhage has been treated by a mixture of 5 per cent. CO_2 with 95 per cent. oxygen; this is stated to have promptly controlled the bleeding in 25 consecutive cases. The author regards this mixture of great prophylactic value and gives it as a routine immediately after delivery, to maintain the tone of the uterine muscle. Since doing so in the last two years he has met with no undue bleeding from the placental site. He maintains that the proper use of CO_2 and oxygen "prevents and controls a condition after the accepted but inadequate measures have failed," and points out that Yandell Henderson suggested the use of carbon dioxide for stimulation of the uterine muscle so long ago as 1909. A mild degree of shock can so diminish the oxidation of lactic acid, present presumably to excess in the tissue of the fatigued uterus, that an acid base imbalance destroys the muscle cell tone. Its effect in correcting this and the acapnia due to hyperpnœa at the end of delivery is the probable explanation of the advantageous results which follow post-partum inhalations of CO_2 and oxygen.

ATOPY AS A CAUSE OF EPILEPSY

THE idea that epileptic fits may be allergic reactions is no new one. Many attempts have been made to track down and remove offending proteins or to carry out specific or general desensitisation in epileptic patients, and the results have not been very encouraging. Dr. Jonathan Forman, however, who is lecturer on diseases due to allergy in the Ohio State University, thinks there is a small but definite group of cases in which atopy—by which he means inherited allergic tendencies—is a dominant factor in the epilepsy, and which can be cured by anti-allergic measures.[2] The four criteria in the diagnosis of these cases are a family history of atopic manifestations, a similar personal history, eosinophilia before or during the attacks, and positive reactions to tests for protein sensitiveness in the skin. For identification of the offending substance Forman favours Walzer's indirect method, in which the effect of the suspected substance is observed on an area of the skin of a normal person into whom some of the patient's serum has been injected. Specific treatment is best effected by removal of the offending substance from the diet or environment. Specific "desensitisation," a term to which Dr. Forman objects, is not likely to be successful in the case of foodstuffs, which are the commonest offenders. Non-specific treatment includes the alteration of the physiochemical balance by various drugs or by vitamin A, and the removal of unfavourable factors. Among the latter Forman includes fatigue, climate, malnutrition, constipation, and focal endocrine and emotional disorders. He gives an account of a few cases which have yielded happy results in his hands, but the method should obviously be reserved for those cases of idiopathic epilepsy in which the diagnostic criteria are present and treatment along the usual lines has failed.

[1] McCormack, R. M.: Anæsth. and Analges., September–October, 1934, p. 213.
[2] Arch. Neur. and Psychiat., September, 1934, p. 517.

AGRICULTURAL RESEARCH

IN its first report [1] the Agricultural Research Council deals with the period from July, 1931, to Sept. 30th, 1933. This is the third research department created by order of the Privy Council, and like the other two—the Medical Research Council and the Department of Scientific and Industrial Research—it is responsible directly to a committee of the Privy Council and with its two fellows is designed to cover the whole field of scientific research in this country supported by Government grants. Of the members of the Council, which meets under the chairmanship of Lord Richard Cavendish, two-thirds are appointed for qualifications in the basic sciences underlying agriculture and one-third on account of general experience and interest in agriculture. The subjects with which the Council is concerned being so numerous and varied, six standing committees were set up to survey and consider problems under different headings. To most of these committees were added from outside the Council one or two specialists on the subject concerned. For many purposes the committee on soils and plant nutrition has collaborated with one on plant physiology, breeding, and disease; the committee on animal diseases with others on animal nutrition and breeding, dairying, and animal products; a sixth standing committee on economics remaining distinct. Other more specialised committees were also formed, and since research on animal diseases was regarded as urgently needed, in view of the large increase in the animal population projected by the Government, that aspect of the Council's work has claimed a large share of attention. Committees have been set up to promote research on tuberculosis in conjunction with the Medical Research Council, on *Brucella abortus* infections in man and animals, on Johne's disease in cattle and sheep, on braxy and allied diseases of sheep, on diseases of swine and on fowl paralysis. The work of the foot-and-mouth disease research committee has also come under review. That the intimate connexion between human and animal disease both on the clinical and the pathological side has been constantly kept in mind is shown by the constitution of these committees.

The agricultural problems concerning plants and animals, in relation to nutrition and to agents of infection, are opportunely brought together at a time when our knowledge of foods is rapidly advancing and diseases due to viruses are taking an increasingly important place in the study of infective processes.

[1] Cmd. 4718. H.M. Stationery Office. Pp. 204. 3s.

The report includes a survey of scientific laboratories and institutes and records as far as its limits permit the state of agricultural research in this country. Unfortunately the Council came into being during the lean year 1931 and the sum of £11,000 put at its disposal for purposes of research requires careful husbanding. The coördinating office of the Council is designed to prevent overlapping and to assist development in new and important directions. The report contains evidence of the need for more workers and increased funds, and it has been one of the main objects of the Council to support the claims of education both in England and Scotland. Agricultural like medical research is largely concereed with applied science, but this does not mean that support will be confined to work on immediately practical problems; the aim is rather to direct it into channels where fundamental problems can be studied in a field suggested by practical needs. Of special interest for medical readers are the introductory reviews in the report which deal with animal nutrition and disease and other biological subjects, but the economic outlook cannot fail to interest all who have a regard for national welfare. The secretary to the Council is Sir William Dampier, F.R.S.

BOARDING-OUT

SCOTLAND has been in advance of this country in its administration of mental hospitals. Patients could enter them of their own free will many years before the Mental Treatment Act of 1930 and could leave them to be boarded outside with far greater ease. The twentieth annual report [1] of the General Board of Control for Scotland states that last year 63 private patients and 1290 rate-aided patients were boarded out. Naturally a large proportion of these are mental defectives. Of the 442 boarders in Glasgow and Govan only 7 required removal on account of unsuitability. The result of placing patients in home conditions and providing simple occupation is proving everywhere encouraging. Latent capacities in many were discovered, but it is the self-respect which is aroused under these home conditions which is the most gratifying feature of the arrangements. It seems clear that whilst the intelligence quotient of the patients may not alter, their whole aspect, physical and mental, may improve. Some of the defectives have been discharged, and the placing of mentally defective children who have come into the courts under guardianship has yielded encouraging results. Patients and guardians are not the only gainers. It is reported that the presence of the patients in the community is of definite value in awakening sympathy and understanding, and combats the medieval ideas still prevalent respecting mental sickness. Last week at the Public Health Congress Lieut.-Colonel W. Brooks Keith told of 26 patients boarded-out from St. Audry's Hospital, Melton. This would not have been possible without the zeal of local voluntary associations. The simple dement and the medium-grade defective are found to be the most suitable types. So far the attempt has only been made in less than 2 per cent. of those usually resident at the hospital. In Scotland the proportion is 7 per cent. The stimulating example is the Belgium town Gheel, with its population of 18,000, of whom 3000 are suffering from mental defect or disorder. They are boarded upon the normal agricultural population, but with full medical supervision. The patients come from many countries, and whilst the arrangements are simple, even crude, the benefits of such a colony are patent. Increasing utilisation of schemes for boarding-out, without discouraging earlier ascertainment, should do something to relieve institutional congestion.

[1] H.M. Stationery Office. 1s. 3d.

DIRECT REPRESENTATION ON THE G.M.C.

Sir Henry Brackenbury was returned last Friday as Direct Representative for England on the General Medical Council, which is in session this week. He obtained 9317 votes to 2665 given to Dr. E. A. Gregg and 2346 to Dr. Mabel Ramsay. His return to the Council, on which he has already sat for ten years, was a foregone conclusion, for he stands in a class apart as elder statesman who through good repute and evil repute has championed all that is best in medical practice, even when many practitioners did not see so clearly the right direction. The astonishing thing is that, with Sir Henry to vote for, the other candidates should have polled so many votes, and the voting is evidence of the strong desire of the constituency to have a woman among its five representatives and of its appreciation of Dr. Gregg's plucky stand as an independent candidate. The five direct representatives on the Council are now Dr. E. K. Le Fleming, Dr. J. W. Bone, Mr. Bishop Harman, Dr. H. G. Dain, and Sir Henry Brackenbury, and as in the ordinary course of events four years must elapse before there is another election, this will give the medico-political committee of the British Medical Association leisure to consider again the working of the election machinery. This was Sir Henry's own suggestion at the last B.M.A. Council meeting, but Dr. Dain went further and desired the omission from the scheme of the requirement to call meetings of the whole profession in each area for the nomination of candidates. Such a provision, he said, gave an opening for the charge of camouflage; it seemed to him anomalous to pretend that the meeting summoned was one of the whole profession and afterwards to make the persons chosen B.M.A. candidates. Dr. Hawthorne's criticism of the scheme was even more downright and, as he pertinently remarked, the method has led to no stronger protest simply because the machine, such as it is, has hitherto resulted in the return of admirable representatives. Now that some representatives, at any rate, resent the method of their election the time seems ripe for revision. And the four years' interval gives time.

THE GERMAN EUGENIC LAW IN PRACTICE

IT is now approaching a year since the German Eugenic Law of July 14th, 1933, came into force,[1] and Dr. Gerhard Simon tells us the effect of the law during the first nine months of the present year in the district of Neuhaldensleben of which he is medical officer. His district, which is one of 67,000 inhabitants mainly employed in agriculture, adjoins Magdeburg on the great plain of the River Elbe in Prussian Saxony. In this district 127 proposals for sterilisation have been received and submitted to careful scrutiny, with the result that no action was taken in 30 cases as the subjects of the proposal were either past the reproductive age or unfit to leave an institution. In only 2 cases was the proposal found to lack due cause, a fact to which Dr. Simon calls attention, as it had been feared that the law might be misused for personal spleen. In 54 cases sterilisation has been carried out after inquiry on the instruction of a eugenic court. In 5 other cases it has been postponed on medical grounds. Of the proposals 55 were for men and 72 for women. Their ages varied from 12 to 46 years, the numbers in the four decades being 10–20 years 36, 21–30 years 53, 31–40 years 35,

[1] See THE LANCET, 1933, ii., 557.

41–46 years 3. The eldest was a man of 46, the youngest a girl of 12, in whose case sterilisation was postponed on medical grounds. The 127 proposals originated as follows:—

By official doctors	72
,, institutional doctors	20
,, legal representatives	3
,, the hereditarily ailing persons themselves	32

That 25 per cent. of all the proposals came from the subjects themselves, Dr. Simon claims as evidence of the wide interest taken by all sections of the population in the need for the new law and the advantage to be gained from it. He writes that few serious difficulties have arisen and very few appeals against the decision of the court, the result, he thinks, of the success of propaganda in awaking a proper public understanding. Dr. Simon concludes with the remark that German eugenists are following with keen interest the efforts made in other European countries to enact similar legislation. The resolution of the Zurich eugenic congress of July, 1934, was widely welcomed in Germany.

PHYSIOLOGY OF ARTIFICIAL PYREXIA

AN editorial article in the *Journal of the American Medical Association* of Nov. 3rd comments favourably on the treatment of syphilis by artificially raising the body temperature. It is apparent that a knowledge of the general changes induced in the body during this type of treatment is urgently needed, and in the same issue Dr. William Bierman and Dr. Ella H. Fishberg record a number of facts concerning modifications in the blood, acid-base balance, circulation, and respiration of patients who have been kept for some hours at 104° to 107° F. At present they offer very little discussion of their findings, but we look forward to the more critical analysis which is promised. We have previously pointed out [1] that, broadly speaking, the outstanding features of hyperpyrexia which is physically produced are the overbearing of the temperature-regulating mechanism, and the direct increase of the metabolic rate of the tissues. This is borne out by many of the statements of Bierman and Fishberg, but how many of the abnormalities they note are due to an exaggeration of normal regulatory mechanisms, and how many to a direct uncontrollable action of the heat, is hard to judge. The loss of sweat may be enormous, attaining such values as 4 litres, and one is tempted to think of it as futile: it must put a great strain on the mechanisms which regulate water metabolism and osmotic pressure, even though the actual fluid is replaced by drinking, and yet it fails to perform the function for which it is called forth—namely, reduction of the temperature. On the other hand the sweat contains great quantities of lactic acid, which, if retained in the body, would have serious effects on the alkali reserve; as it is this is reduced by half, and the question arises, Is there after all a "physiology" of hyperpyrexia? Perspiration certainly seems to subserve an excretory function under these conditions, since, in comparison with sodium chloride, the lactic acid is concentrated twenty times in the sweat. Prof. Y. Kuno [2] has also adduced evidence of a specific excretory action of the skin during exercise, and suggests that, when lactic acid is eliminated by this channel, possible damage to the kidneys is averted; he states that the incidence of albuminuria in athletes is roughly in inverse proportion to the lactic acid content of their sweat.

The origin of this lactic acid is, on the evidence presented, difficult to account for. The circulation-rate may be increased up to 400 per cent. and the oxygen capacity of the blood nearly 20 per cent.; hence the oxygen available for the tissues is enormously increased. Their oxygen usage is, of course, also increased, but asphyxia is ruled out by the fact that the difference between the oxygen-content of the arterial and venous blood is small; the tissues seem to be rejecting oxygen and yet producing lactic acid. Both the free and combined carbon dioxide of the blood are lowered, so that although the alkali reserve is small, the blood is actually more alkaline in reaction than usual, and the respiratory centre is correspondingly depressed. It is impossible to attempt a plausible explanation of so many seemingly contradictory disturbances until their mutual relationships have been more closely scrutinised. The condition presents certain points of resemblance to Yandell Henderson's "acarbia," [3] which he describes as typical of subacute asphyxial states, and for which he finds a theoretical explanation difficult.

HORMONE TREATMENT OF UNDESCENDED TESTIS

AT a meeting of the section of therapeutics and pharmacology of the Royal Society of Medicine, on Nov. 13th, Dr. A. W. Spence and Dr. E. F. Scowen reported their observations at St. Bartholomew's Hospital on the treatment of cryptorchidism with prolan. It may be recalled that P. E. Smith and E. T. Engle showed that injections of an extract of the anterior lobe of the pituitary caused descent of the testes—and the appearance of other secondary sex characteristics—in immature animals. These effects were due to activation of the interstitial cells of the testis, which were led to produce their hormone in quantities similar to those of mature animals; and Engle later demonstrated that the same result could be obtained by injection of the gonadatropic substance from the urine of pregnancy. Spence and Scowen injected 500 rat-units of prolan intramuscularly, twice weekly, into eleven boys of ages ranging between 4½ and 15 years. In the successful cases the descent of the testes took place in periods varying from 2 to 11 weeks. In two out of five patients with bilateral cryptorchidism, both testes descended normally, and in two others one testis descended; in the fifth there was no change. Of six cases in which the condition was unilateral there were suitable reactions in three. These observations confirm the work of S. B. D. Aberle and R. H. Jenkins,[4] who got very similar results in man and the rhesus monkey. They are a remarkable and unexpected outcome of laboratory work on the sex hormones, and it is not irrelevant to refer at the same time to a somewhat surprising action of œstrin which has only lately been recognised. In 1933 Harold Burrows, E. C. Dodds, and N. M. Kennaway [5] showed that if œstrin be painted on the skin of mice the animals develop peculiar hernias in the scrotal region, and this finding has been pursued in greater detail by Burrows.[6] The hernias described may be due to a relaxation of the pelvic muscle, and the discovery of this effect makes it seem unnecessary to postulate the existence of a separate hormone "relaxin," which has been held responsible for some of the physiological changes of pregnancy.

[1] THE LANCET, 1934, i., 1129.
[2] The Physiology of Human Perspiration, London, 1934.
[3] Jour. Amer. Med. Assoc., Sept. 8th, 1934, p. 750 and Sept. 15th, p. 834.
[4] Jour. Amer. Med. Assoc., Aug 4th, 1934, p. 314.
[5] Nature, 1933, cxxxi., 801.
[6] Brit. Jour. Surg., January, 1934, p. 507; see THE LANCET, 1934, i., 411.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XXIX.—THE PROGNOSIS IN MALARIA INFECTION

IT is difficult to state in precise figures the liability to complications or permanent disability following malaria. The outlook has, however, greatly improved since the war. There the ravages of malaria were to be seen at their worst, but under satisfactory conditions of life the prognosis in malaria infections is on the whole a good one. The change in outlook is due to improved methods of diagnosis and of treatment, especially the latter.

In all forms of malaria, as in other protozoal infections, the earlier and the more energetic the treatment, the greater the hope of effecting a permanent cure. In other respects the prognosis in each of the four clinically separable conditions—which arise from infection with the four distinct species of malaria parasites found in the blood of man—differs widely and must be considered by itself.

Benign Tertian Malaria

This form of malaria is the most familiar one. In the typical clinical state a paroxysm of fever is produced by this parasite once in every 48 hours, but it is now recognised that there are many variations to what has been described in text-books as the classical tertian temperature chart. There is, for instance, a quotidian and sometimes remittent initial temperature which resembles that of typhoid fever, and unless this is recognised by the physician many mistakes are liable to be made both in diagnosis and in prognosis. Apart from its disagreeable habit of manifesting relapses at odd, and often unexpected intervals, benign tertian malaria cannot in any sense be regarded as a menace to life. The relapses usually occur at monthly intervals, but infection may remain latent, and an interval of nine months to a year may elapse between one relapse of the same infection and another. Thus it comes about that a patient may develop a typical malarial attack in some northern country, such as England, a year, or even as long as two years, from the time he leaves an endemic zone. Benign tertian malaria may produce debility and psychological disturbances, but though it may lead to a grave secondary anæmia, so pronounced as to give rise to the suspicion of some more serious underlying cause, it seldom kills. In times of stress and danger patients heavily infected with the parasite may possibly die of heart failure during great and long-sustained exertion. Even under the most searching conditions, however, the gravest danger of benign tertian malaria is its liability to produce relapses; and it is now becoming gradually recognised that quinine, given in any form, and in whatever heroic dosage, is quite incapable of finally exterminating this infection, at any rate in tropical countries. This has given rise to serious doubts about the much-vaunted specificity of this drug. Here again it must be stressed that in malaria, probably more so than any other type of infection, the quality of the soil is as important as the character of the seed; no drug, however administered, appears to have such curative action on people who are harassed and underfed as on people who are well nourished and housed in a good climate. Prognosis in benign tertian malaria is different for patients continuing to reside in the tropics and for those who live in this country.

Further, not only do the clinical states produced by the various species of malaria differ, but also the life-span of the particular parasite. It is generally agreed that the life-span of one infection of the benign tertian parasite is three years, or at most three and a quarter years. A patient infected with malaria in the tropics should thus not expect to suffer from relapses for more than three years after returning to England. There is no doubt, too, that an immunity to each particular species of malaria parasite is produced; S. P. James has pointed out that the recurrences of relapses at odd intervals, with the shedding of the toxins into the blood stream, stimulates the machinery of immunity and thus a person who has recovered from a severe attack of benign tertian malaria becomes immune and can no longer become infected. This fact, long known to tropical residents, has now been proved experimentally.

Fortunately no complications of benign tertian malaria are at all comparable with those produced by some of the other species. The advent of the new chemotherapeutic drugs should greatly improve the prognosis in this type of infection. In India, especially in the Army during recent years, it has been shown that the relapse-rate from benign tertian malaria amongst the troops can be reduced from a figure of over 20 per cent. to about 8 per cent. with three weeks' quinine treatment followed by a short course of a combination of quinine and plasmoquine. Atebrin, the newest advent amongst malaria specifics, appears to have a slow but sure action upon the benign tertian parasite. It is usually well tolerated by these patients, and if given in three or more prolonged courses of a week on end the results appear to be satisfactory. Atebrin in large doses given over periods of more than 10 days appears to be a cerebral excitant and in susceptible people may produce a temporary psychosis. (See THE LANCET, Nov. 3rd, 1934, p. 979.)

Subtertian or Malignant Malaria

The parasite that causes this disease, although not zoologically far removed from that causing benign tertian malaria, should be regarded as belonging to a totally different order. The clinical states that it may produce are almost bewildering in their variety. They may be merely transient; causing low fever, occasional headaches, a sense of malaise, or just a feeling of inability to perform the daily task; in fact, the parasite has acquired the property of lying low in the blood, ready to spring forth whenever a suitable opportunity presents itself. Patients coming from the West Coast of Africa, where this infection is almost universal, mostly arrive in England feeling in the best of health. It is only when they have lived here for a month or two that this fever makes itself apparent, often in the most alarming forms.

Subtertian malaria may precipitate a sudden catastrophe and may even be the cause of sudden death. The parasites, which accumulate in the capillaries of various internal organs, may attack the brain, where they produce cerebral symptoms; the liver, where they produce jaundice and other hepatic complications; the pancreas, producing acute pancreatitis; and the intestines, producing choleraic symptoms, and even those of intestinal obstruction. They may produce symptoms of dysentery and intestinal hæmorrhage, or purpuric effusions into the skin.

COMPLICATIONS

Cranial complications.—Of the complications, those which attack the brain are the most serious. These may take the form of mania, delirium, epileptiform convulsions, hemiplegia and altered psychology, and so on. It is now coming to be recognised that severe alterations in the mentality of a patient who has suffered from subtertian malaria, and even clinical conditions which may resemble encephalitis lethargica, may be an aftermath of cerebral infection with the parasite. These states are produced by small subcortical hæmorrhages which, if not immediately fatal, leave behind them disseminated malarial granulomata which represent the organisation of minute hæmorrhages.

There are, too, the rarely seen ocular affections; "malarial amblyopia," due primarily to an anæmia of the retina as a result of malarial infection of the retinal vessels, which may produce partial destruction of sight.

These major and tragic aspects of subtertian malarial infections are more liable to be seen in the non-immune person—i.e., the tenderfoot on his first visit to a malarious country; they are not usually seen in natives who have produced a strong immunity against this disease, or in Europeans who have passed through the "salting" stage. Cerebral malaria does not often arise *ab initio* in England; such cases as have reached these shores have usually developed cerebral complications on board ship. In these *accés pernicieux*, as the French call them, the outlook is extremely grave unless the most vigorous antimalarial measures are instantly taken.

Blackwater Fever.—The minor clinical forms of subtertian malaria bring other dangers; symptoms may be referable to the digestive tract, for instance, nausea, vomiting, signs of indigestion without a rise of temperature. Often subtertian attacks are apyrexial, the so-called algid forms. Very often too, in these cryptic infections, there is no anæmia or any enlargement of the spleen to guide the unwary. These are the dangerous cases, for the man with the fewest symptoms, and often the fewest parasites in his blood, is the one most likely to develop that most dangerous complication, blackwater fever.

It is probable that the longer a person is infected with subtertian malaria the more prone he is to develop blackwater fever, which seldom develops following a first infection. The liability to develop blackwater fever appears to depend upon the life-span of the parasite. For instance, blackwater fever may appear any time from the day of arrival in this country to nine months after arrival, when the liability disappears. Blackwater fever is the worst feature in the prognosis of subtertian malaria, for the mortality of this disease is usually about 25 per cent.

THE EFFECT OF TREATMENT

It is this great variability in the symptomatology of subtertian malaria and the diversity in the complications which can follow in its path that confuse the public mind about malaria as a whole. The prognosis of subtertian malaria, once diagnosed, depends largely on treatment. It used to be argued that the larger the doses of quinine given, the more certain the massive destruction of parasites and the better the outlook. Few now accept this point of view. The subtertian parasite is, on the whole, much more amenable to quinine than is the benign tertian, but the parasites are much more numerous, multiple infections of individual corpuscles are more common, and chemical processes occur within the infected corpuscles which cause them to conglomerate and so cause blood stasis. In the treatment of this form of malaria, therefore, many more factors are involved than the mere killing of the parasites. It has, moreover, been pretty well shown that massive doses of quinine (grs. 30 or more a day), especially if given intramuscularly or intravenously, are liable to excite blackwater fever. There has been more uncertainty about the treatment of subtertian than about the treatment of any other form of malaria. There is reason to believe that with the advent of atebrin the outlook has become much altered. It is now possible to exterminate this parasite in the blood with adequate doses of atebrin, with quinine perhaps as an adjunct, in a way never formerly anticipated; it is possible to prevent entirely the recurrence of relapses. Immunity is much more easily produced in the human body to subtertian malaria than to the benign form, so that even under natural conditions relapses are rarer. The extreme degree of anæmia and cachexia, the hard-baked spleen, the wrinkled and pigmented skin, the emaciated facies formerly common in retired residents from the tropics, are no longer to be seen. An average attack of subtertian malaria treated early and adequately should not interfere with the subsequent good health of its victim, and the liability to blackwater fever is becoming less and less. It is possible that in cases adequately treated with atebrin blackwater fever will not develop.

Quartan Malaria

Quartan malaria is undoubtedly the rarest form of infection in the European who visits the tropics. It has a peculiarly limited geographical distribution, but it is liable to turn up when least expected. It produces odd and indistinctive attacks of fever, often at widely separated intervals, and can apparently exist in the human body for a much longer period than the two forms dealt with above. The life-span of this parasite is anything from five to six years. As a rule its presence does not interfere with general health, but one complication—parenchymatous nephritis—follows it more commonly than any other type. The association of quartan malaria with nephritis has been suspected since the first observations of Malcolm Watson and Clarke in Malaya, and researches in British Guiana by Giglioli have confirmed it. Long-continued infection with this parasite undoubtedly predisposes to parenchymatous nephritis, which is common among tropical natives. Occasionally quartan nephritis is seen in Europeans; its course can be greatly modified by adequate treatment of the underlying malaria. Acute nephritis associated with quartan infection is the most satisfactory form to treat. The action of atebrin upon this parasite is not yet established, but it has been shown to yield to prolonged treatment with quinine and plasmoquine in the same manner as does the benign tertian.

Ovale Tertian Malaria

The parasite *Plasmodium ovale* has only recently been established as more than a museum curiosity in man. It is possibly a parasite of the monkey which is now becoming adapted to the human host; it has been found only in those parts of Africa, the Congo and adjacent regions, where the great apes live. Its life in the human blood is a very limited one, and it is apparently capable of producing only the mildest forms of fever; the prognosis of infection with this parasite is extremely good; the organism is so kind as to die out of human blood of its own accord, without the necessity of prolonged drug therapy.

PHILIP MANSON-BAHR, M.D., F.R.C.P.
Physician to the Hospital for Tropical Diseases, Consultant to the Colonial Office and Crown Agents for the Colonies.

PANEL AND CONTRACT PRACTICE

Some Figures from London

THE number of insured persons in the County of London entitled to medical benefit in the third quarter of the present year was 1,891,635, the number of practitioners on the medical list 2068—there are besides 123 institutional doctors on the list. Of these 45 have no insured patients at all, 645 have less than 250 insured persons apiece, whilst only 3 (who must of course be in partnership or have an assistant) have over 4000 on their lists. The average list for London, excluding assistants and limited lists, is 927. The number of prescriptions issued in that quarter was 1,811,343, as compared with 2,518,478 in the first quarter of the year, the number of prescriptions per insured person dropped from 1·41 to 1·10, and the cost per person from 10·93 to 7·86 pence. These are averages for the whole of London, but some interesting figures were recently got out to show the work done by practitioners with panels of comparable size in different areas of the metropolis. The number of prescriptions issued per insured person in these practices (all containing over 3000 insured persons) in July, 1933, was:

Paddington	0·37
St. Pancras	0·32
Shoreditch	0·65
Stepney	0·40
Westminster	0·16

the average for the whole of London being 0·32. The probable explanation of the large difference in Westminster is that the bulk of the insured persons in that area are of the domestic servant class, who attend the surgery for minor ailments but are usually sent home if seriously ill. The panel doctor sees little of them whether ill or well.

Arch Supports

Arch supports are no longer "ordinary splints," and therefore cannot be ordered by insurance prescription. No prescription for such supports has been issued since August, but in the first quarter of the year there were 16 at a cost of £4 2*s*. 9*d*., in the second 33 at a cost of £15 16*s*. 6*d*., and in the third 76 at a cost of £53 0*s*. 4*d*. It seems that in each successive quarter the number of prescriptions doubled whilst the cost was nearly four times as much. It would be interesting to know the explanation for the higher cost per prescription.

Fees for Emergency Treatment

A practitioner is required to visit and treat any insured person on his list whose condition so requires it. He is therefore obliged to attend without extra payment to any accident or sudden emergency that may occur to any one on his list. In the event of this practitioner not being available what is the insured person in urgent need of treatment to do? Obviously he must call in another practitioner who, if not an insurance practitioner, will charge him a fee. The patient will then have the right to claim through the insurance committee for the return of that fee, the amount to be deducted from his doctor's remuneration. If the second doctor is an insurance practitioner he should not in the first instance charge a fee, for he is entitled to be paid for his services by the insurance committee under the emergency treatment scale; if, that is to say, the case is decided to be an emergency. If not, he can then charge the insured person a fee subject to certain reservation.

Who then has to decide what is an emergency? The answer is that the panel committee has the duty of deciding whether the condition found by the second doctor was in fact an emergency, after receiving reports from both the doctors concerned. If the case is held to be an emergency, the panel committee has then to decide whether the fee should come out of the first doctor's remuneration or out of the general fund from which all insurance practitioners are paid. If the first doctor being away left no one available to do his work in his absence, the emergency fee will almost certainly be deducted from his remuneration. But emergencies do not always occur within two miles of the surgery of the doctor responsible and, if it takes place in some area quite out of reach of this doctor, payment for the second doctor's services will be ordered from the fund. Again, patients are not always living at home when they require emergency treatment, and if they stay more than 24 hours in another locality they become temporary residents there, when they are placed temporarily on the list of a practitioner in that area. If residing less than 24 hours outside their home area, the emergency scheme applies even to an insured person who has neglected to choose an insurance practitioner at home and is therefore on no doctor's list. The regulation which deals with this matter is at first sight rather ambiguous in its wording. The clause reads:—

> *Temporary Residents.*—A person who is accepted by or assigned to a practitioner as a temporary resident after the first day of a quarter will be deemed to be included in his list on the first day of the next quarter. Provided that if any application for treatment in cases of accident or other sudden emergency is made by an insured person (*a*) who is outside the radius of practice of the practitioner responsible for his treatment or (*b*) who is not on the list of any practitioner and who is outside the area of *his* residence and if in either case the insured person intends to remain and in fact remains outside such radius or area for less than 24 hours the practitioner providing treatment will, instead of having the applicant placed on his list, be entitled to be paid as though the treatment had been given in an emergency under the immediately preceding clause, and the amount paid to the practitioner will be payable out of the fund in the same manner and subject to the same conditions as payments made in respect of the administration of anæsthetics. . . .

The ambiguity relates to the word which we have italicised. At first sight it appears that "his" relates to the practitioner's residence but when carefully read it obviously applies to that of the insured person. This wrongful interpretation caused a panel committee recently to disallow a claim for a fee by a doctor who had treated an emergency within the area of his (the doctor's) practice for an insured person who was not on anybody's list. The doctor's claim therefore clearly comes within the subsection quoted above.

The position of the panel committee is not easy in these cases. It has to be fair to (1) the doctor responsible for treatment, (2) the doctor giving the treatment, and (3) the insured person. Taking them in order—if the doctor responsible is at home, and is not sent for, it is hardly fair that he should have to pay the cost of treatment he could easily have given. The second doctor, on the other hand, has often little hope of being paid for getting up in the middle of the night to see some case which from the messenger's description is thought to be urgent, if he is not allowed an emergency fee by the committee. The insured person, being the party who actually feels ill, is always convinced that whatever

was found to be the matter when the second doctor arrived it was definitely a serious emergency when the doctor was sent for. Distance is another difficulty in these cases. A doctor living close at hand will often be consulted for some supposed emergency rather than the responsible doctor living some distance (under two miles) away—simply owing to the disinclination to travel the extra distance. A person getting grit in his eye will generally go to the nearest doctor for relief, rather than to his own doctor a mile away. It can hardly be argued that such a case is an emergency—the eye would hardly be appreciably worse for the extra ten minutes before the foreign body was removed—yet the patient will certainly maintain that it was too painful for him to wait, and the second doctor could hardly refrain from moving the grit when the patient is actually in his consulting-room. This is enough to illustrate the difference between lay and medical opinion on what constitutes an emergency.

SPECIAL ARTICLES

MENTAL WELFARE

ONE session of the conference held last week at B.M.A. House, under the auspices of the Central Association for Mental Welfare, was given up to a consideration of modern tendencies and developments in

Work for Mental Defectives

In spite of the excellent recommendations of the Wood report the administration of the Mental Deficiency Acts has, so far, proved half-hearted and ineffective. This may well be due to the multiplicity of administrative control, for the labour is divided between the education and health committees of local authorities and the public assistance committees, while coöperation with the governors and superintendents of the institutions concerned is essential. Miss Evelyn Fox emphasised these difficulties in her historical survey of the work of the Association; none of its work, she said, would have been possible without the support and enlightenment of the Board of Control. She pointed to the negligible increase in the accommodation of special schools since they were started. The number of pupils in 1913–14 was 13,110 and in 1933 was only 16,862. The number of feeble-minded children is about 105,000 and according to Dr. E. O. Lewis's estimate 300,000 backward children are to be found in the elementary schools. Miss Fox considers that the patently inadequate provision made for these children is due to direct discouragement on the part of the Board of Education who ignore the recommendations of the Royal Commission in the interests of economy. Several other speakers at the conference agreed with her in thinking that medical certificates should not be necessary for attendance at special schools or classes and that this should be an educational rather than a medical matter. Under the present system there can be no outside supervision of defectives between the ages of 14 and 16 unless they have attended special schools. It is obviously unfortunate that this arrangement, made with the best of intentions, should have been so much misapplied. Furthermore, it was pointed out in the discussion, that some monotonous industrial occupations were very suitable for defectives; many special school pupils were successful at them in after life. Miss Nugent (sec., Kent A.M.W.) said that it was in the interests of the community to encourage the establishment of occupational centres if only from an economic point of view; their cost is far less than the later cost of the same child under guardianship or institutional care.

The Association has made great advances during its 21 years of existence and now has 51 local voluntary associations covering a population of 37 millions. Not least among the duties of a mental welfare worker are the adjustment of difficulties in home environment and the removal of prejudice against institutions. Dr. Noel Burke described the increasing tendency to replace the barrack-like buildings formerly used for institutional care by comfortable homes and colonies. Defectives are now trained to live useful and happy lives either permanently in the colony or outside it in at least 10 per cent. of cases. Employment is facilitated by removing the child from an atmosphere of depression and placing him in one of achievement. The Association undertakes the training not only of social workers but also of teachers of dull and backward classes, both highly specialised arts.

The importance of early ascertainment was stressed by most of the speakers, and Dr. L. S. Penrose pointed out its special value to research. Dr. R. H. Crowley urged that notification should not depend, as at present, upon whether the child has attended a special school, but upon the child's own merits. Reliable ascertainment is essential for effective supervision.

Another session of the conference dealt with the voluntary provisions under

Section V. of the Mental Treatment Act

This was also the topic at the quarterly meeting on Nov. 20th of the Royal Medico-Psychological Association when Sir HUBERT BOND, who, in introducing the discussion, said he considered that this part of the Act would come to be looked upon as a charter of liberty. A fair title for the section would be "No certification but promptness of treatment." His plea was that every effort should be made to get mental patients to avail themselves of it. Though the general response had been somewhat disappointing, he could not apply the word failure. Patients were divisible into three grades: the willing, the indifferent, the unwilling. In most cases it was not difficult to place patients in their due category, but, where difficulty was felt, advantage could be taken of the 28 days' suspension provided in the Act. There would always be patients unable to express either willingness or unwillingness; these the Board assessed at 15 per cent., and the Board suggested 55 per cent. as the proportion of voluntary admissions likely to be attainable at county and borough mental hospitals, leaving 30 per cent. to come in under certificate. Of the admissions to registered hospitals and licensed houses some 6·5 per cent. were received as temporary patients, the corresponding proportion for public mental hospitals being 1·8 per cent. Unfortunately, in only about two-thirds of the public hospitals was use made of this section. Eliminating non-users, it was found that 2 per cent. of the admissions to county mental hospitals during 1933 were temporary patients, 5·3 per cent. to borough hospitals. This comparison illustrated the beneficent results which arose from close contact between hospital staff, practitioners, and lay officials, supported by the mental hospital committee and magistrates.

Dr. NORMAN MOULSON (Cefn Coed Mental Hospital, Swansea) said that the staff at his hospital set out with the intention of making the best possible use of the Act, especially the provisions in Section V., the working of which in his area was proving increasingly successful.

Dr. W. ROBINSON (City of London Mental Hospital, Stone) said that from 1925, when the City of London Various Powers Act came into force, to the end of 1930, 383 private patients had avoided certification and entered the hospital as direct admissions, though they were not strictly voluntary patients. Since the Mental Treatment Act, 1930, had been in operation, 255 private patients had been admitted on either a voluntary or a temporary basis, in the same period 48 under certificate. Thus for them reception without certification must be regarded as a success. But in three years only 1 out of 50 rate-aided patients had been received without certification. At least two out of three of them might have been sent in on a voluntary or a temporary basis. Of the voluntary private patients 102 had had to be subsequently certified, and regrading had to be carried out in 145 cases out of a total of 1076. He shared Sir Hubert Bond's hopefulness.

Mr. L. G. BROCK (chairman, Board of Control) said one of the main difficulties was to educate public assistance committees and relieving officers. Members of the Association might also point out to practitioners who sent patients that Section V. might have been used instead of certification, for it was impossible to escape the fact that certification was held, in the present state of society, to carry with it a stigma. This was shown by the persistent and skilful efforts to avoid it made by lawyers and all concerned in the case of better-off patients. The latest figures showed an improved use of Section V. He was looking forward hopefully to the time when the treatment of mental cases would be decided, not on judicial authority, but on purely medical indications.

Dr. WILLIAM DAWSON referred to the similar Act for Northern Ireland passed in October, 1932. Dr. N. C. Patrick had given him the figures for the first completed year's working. Admissions to public mental hospitals in that year numbered 1227, 63 (or 5·1 per cent.) being temporary patients, a higher proportion than in this country. Ten of them had to be certified later. At the two private mental hospitals 23 of the 42 (55 per cent.) total admissions were voluntary patients. From the public hospitals 23 were discharged recovered, 14 relieved or improved.

Dr. M. ABDY COLLINS spoke of the working of Section V. in country districts. The body of general practitioners had not yet, he thought, a proper grasp of the provisions of the Act; fortunately errors in filling up the form could generally be put right on the patient's arrival. It was not appreciated that a patient admitted under an urgency order could be treated as a temporary patient during the week covered by the order.

Dr. REGINALD WORTH, while agreeing that this Act was a great advance on the old one, especially in regard to voluntary patients in public mental hospitals and their admission under an emergency order, said that the temporary order did not appeal to him. The stigma attaching to the certified patient was not lessened much if the patient had only been temporary. In his own hospital (Springfield, Tooting), though easily accessible, there had been only six temporary patients since the passing of the Act, and two or three of those had to be certified later. It was often difficult to know whether the patient had sufficient volition to know his own mind.

Dr. J. N. SERGEANT thought it was impossible to ignore the existence of the stigma which was supposed to attach to people who had been in a mental hospital, though all reasonable people admitted there was no real cause for it. When education had made better strides there would be less need for such measures of expediency. If due regard was paid to expert medical opinion, the population of mental hospitals might consist almost solely of voluntary and temporary patients.

Dr. DANIEL RAMBANT said the temporary patient system had been proved very useful for patients suffering from alcoholic insanity, but he had found 28 days too short a time for detention following the return of volition. In any future amendment of the Act he hoped that would be borne in mind.

PUBLIC HEALTH CONGRESS

DURING this congress, of which we reported last week some earlier sessions, the Incorporated Association of Hospital Officers set themselves, under the chairmanship of Sir ARTHUR ROBINSON, secretary to the Ministry of Health, to answer the question

Should the Chief Administrator of a Hospital be a Layman?

Major JACKSON, who opened the discussion, said the question was one of great practical importance. The administrator of the municipal or county hospital was a medical man, but his duties did not include raising money, purchasing supplies, settling questions of policy, and attending to the details of erection of new buildings. Moreover, he had fewer specialist departments to deal with than in a voluntary hospital. Was it advisable to train a man in medicine and surgery when the greater part of his time would be spent in administrative details? An administrator might be found among medical or lay persons, but the gift was an inborn one, and was on the whole more likely to be found amongst laymen because they could devote their time exclusively to the work. In large municipal hospitals the medical man in charge had a layman under him. The evidence was in favour of the layman as chief administrator on the ground that his whole life could be lived in the sphere and pathway of administration. A good doctor could not as successfully be anything else. Administration called increasingly for its own special training.

Major H. DRYLAND, speaking as a lay officer of the mental hospitals service, said that the mental institution had special problems of its own: the population did not fluctuate much and very few of the patients were bedridden. One of the chief difficulties was to find suitable occupation and recreation. As many as 90 per cent. were occupied in many hospitals now. The chief direction should undoubtedly be medical. The mental hospital had more and larger departments than the voluntary hospital nowadays, with consulting specialists; its committee carried out under statutory authority all the functions of the great hospital and several more. If the medical man could administer that he could administer the voluntary hospital. The lay officers suggested that he should have always at his right hand one man to attend to the business side of things. Present practice varied considerably. He agreed that where a doctor became a good administrator the medical flame burned less brightly. While the chief authority should be medical he should be fully relieved of all administration that a competent layman could undertake.

Mr. E. METIVIER (Edmonton) related experience of the very competent surgical officer of a large hospital who worked most harmoniously with his chief steward and devoted himself to his profession. While the head should be a medical man, he should have a right-hand layman with proper status. The clerk or steward must not be a sort of supernumerary officer but the right kind of man. The lay administrator must not be belittled. In the old poor-law days the Master, who was supreme, had refused to recognise the superintendent nurse and the present trend might be reaction. There should be three chief people in administration: the doctor, the lay administrator, and the matron.

Mr. A. H. LEANEY agreed that the problem was one of very great importance for the future. The voluntary hospital would owe its continued existence to very much better administration—in all departments, including the medical. In the old days three people counted: the Governor, the Doctor, and the patient, with a very small p. Nowadays there was a large team. The administrator to-day was a coördinator of many departments. The important matter was the way in which the job was done and great strain was thrown on character. More and more the patient would become a case to the doctor and less an individual; the administrator must be one who always remembered the patient as a person. He must be given equal status with the physician and the surgeon. Medical men had managed to discipline themselves in the past, but they were under terrible temptations to-day and there should be someone in control of medical as well as lay hospital workers.

Mr. E. H. HEALEY, representing the old Masters' and Matrons' Association, said the term "pauper" was entirely forgotten in the service. The duty of raising money could surely be removed without difficulty from the tasks expected of a superintendent; so also could the supervision of building. In the purchase of stores and supplies the municipal hospital compared favourably with the voluntary hospital; standardisation and centralisation had gone far, though the responsible officer still had to exercise judgment. There must be one supreme head and he must be medical, but the lay administrator should have a clearly defined scope and assured status. The only hospitals run like this were the service and the council ones. It was erroneous to think that the duties of the medical officer in these institutions were increasingly administrative as he rose in the service. Responsible heads of the medical, nursing, and administrative departments should be given clearly defined duties, access to the committee, right of report, and a chance to carve out a career.

Mr. J. S. STEVENTON (Salop) agreed with the reader of the paper. He had for years encountered examples of profound lack of business knowledge in first-class medical men. Somebody outside the profession should be in charge.

Dr. T. W. GOODE (Oxford) criticised the word "chief" in the title. For dealing with a medical question there must be a medical man. It was his aim to leave his clerk and steward to deal with stores, but at the same time to express his opinion on any matter that had a medical bearing. It was easier for a medical man than a layman to mention matters of administration to medical men. The two must work together as two hands and neither must be "chief." The problem was not who was cock of the walk but how to get people well.

Mr. H. L. EASON, M.S. (Guy's Hospital), described himself as like a mule addressing an audience of horses and asses as to which was the better parent. Seeing that the duties of any chief administrator included incoming money and appeals, keeping accounts, general administration and discipline of the institution, and advice and policy, no one man could do them all. There should be more than one administrative head. A long medical knowledge and continued active practice prevented an executive officer from becoming narrow-minded and gave him a livelier interest in the people with whom he dealt. The characteristic of the medical profession was intense individualism, and this was the breath of life to medicine. A medical administrator could act as a more successful go-between in matters of policy, extravagance, punctuality, and so on. The word "chief" was a bad one. Some lay administrative officers forgot the best traditions of medicine in making appeals or getting on good terms with the press, breaking that strict confidence which should exist between patient and hospital. Matters far more important than buying tea and butter were apt to be lost sight of if the superintendent were not medical. No administrator could run a hospital; he must have a team, and the gifts he needed most were human understanding and tact. It would be difficult to get any collection of lay administrators more efficient than the team of ex-medical superintendents at County Hall who helped to run the service. There was and could be no answer to Major Raphael's question.

Mr. R. H. P. ORDE (hon. sec., British Hospitals Association) had found no difficulty in approaching and dealing with matters on the borderline of administration and treatment if he went the right way about it. He wondered at the vitality of this dispute. Thirty years ago anybody had been regarded as capable of running a hospital, but now administration was (and should be) taught, so that the officer did not learn at the expense of the hospital. The terms "layman" and "doctor" had no relevance at all. A hospital was a hotel for the sick and required just as much management. There was a danger when a man possessed qualifications not in constant use: they caused a bias, and if there was one man on God's earth who needed to be free from bias it was the hospital administrator.

Dr. CAROLINE MAUDE said there must be two people if the hospital was large. There was a great need to separate the clinical superintendent from the administrator, the last word being said by the former. The first consideration was the patient. There was a lack of coördination of the different medical services in voluntary hospitals; a clinical superintendent would correct this.

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

A COMPENSATION CLAIM

AN injection of camphor was ordered by the senior physician for a woman who had been operated upon in the obstetrical section of a municipal hospital (St. Rochus). The physician was occupied with an urgent operation and he gave his instructions to a junior. (In Hungary licences to practise are granted only to candidates who have served a year's apprenticeship after passing their examinations.) The injection was administered by the junior on the inside of the thigh. The patient experienced great pain and the senior physician had to be called. According to several witnesses, patients lying in the same ward, he turned to the junior and said: "You young fool, what have you done?" After a few days the woman was

transferred to the surgical section, where her leg had to be amputated because of thrombosis. The public prosecutor brought an action against the junior for negligence causing severe bodily injury. Two medico-legal experts gave evidence that in their opinion the thrombosis had been caused by the injection, which had been wrongly administered. Against this, the supreme judicial medical council asserted that from the medical point of view no exception could be taken to the method of administration, which is one practised at several hospitals. On this evidence the junior was acquitted of any criminal liability. The patient did not acquiesce in this verdict and sued the city of Budapest, the senior physician, and the junior for damages amounting to about £500 and a monthly allowance of £15. It was urged on her behalf that the hospital was a municipal one and as such was responsible for any errors committed by its staff. The case was brought before the high court of justice, which rejected the opinion of the medical council and accepted the evidence of the medico-legal experts. It accordingly found for the patient and ordered the city of Budapest and the two doctors to pay the damages and the annuity.

CENTRAL BUREAU FOR THE SALE OF NARCOTICS

This new body, which has its offices in the vicinity of the central police station of Budapest, is administered by the local government authority and the minister for the interior. At its head is a captain in the police force and he has under him a staff of seven, including one medical expert and four detectives, all men with a special knowledge of smuggling. The first case with which the new bureau had to deal was that of a cocaine smuggler who stole blank prescription forms from several medical practitioners. On these he wrote out prescriptions for narcotics and forged the doctor's signature. With some circumspection, he handed in the prescription to a chemist at the other end of the town from where the doctor lived, but the chemist's suspicions were aroused. He telephoned to the police and they came and arrested the man, who proved to be a notorious cocaine smuggler.

DIPHTHERIA IMMUNISATION

The routine method of diphtheria prophylaxis in Hungary at present is immunisation with the Ramon anatoxin. According to the experience of Hungarian specialists this method gives a 90 per cent. immunity against the disease. This protection lasts for at least four to five years, and further observations may eventually prove that the immunisation is of still longer duration. In the district of Balatonfured, where diphtheria is endemic, immunisation was made compulsory in the autumn of 1931. Since then 2922 children between the ages of two and four have been inoculated annually. Since the first inoculation only one out of these 2922 children has contracted diphtheria, and even then the illness was very mild.

MEDICAL FINANCE

All medical practitioners in Hungary are now obliged by law to keep in a ledger an accurate chronological account of all the money they receive and of all the professional expenses they incur. Each receipt and each item of expenditure has to be entered separately, and it is hoped that this will make it easier to assess the income-tax of medical practitioners. It is not necessary to disclose the names of patients or the nature of their diseases.

The journal of Hungarian dental surgeons (the *Magyar Fogorvosk Lapja*), which is now in the thirteenth year of publication, has found it necessary to issue a medico-economic supplement. Members of the dental profession are faced with many economic problems as a result of the constant battle they have to wage with the dental technicians, whose illegal competition is a menace to them.

IRELAND

(FROM OUR OWN CORRESPONDENT)

CLEAN MILK

THE Irish Clean Milk Society held its annual meeting in Dublin, on Nov. 23rd, under the chairmanship of its president, Sir Edward Coey Bigger. In the seventh annual report, presented to the meeting, attention is drawn to the neglect by many hospitals to ensure that their milk-supply comes from a tuberculin-tested herd. Letters were sent to 32 hospitals and nursing homes in Dublin and County Dublin making inquiries on this point: 16 answers were received, of which 12 gave assurance of that precaution. Letters were likewise sent to 43 hospitals in the rest of the country: only 12 replies were received, two hospitals only being supplied from tuberculin-tested herds. A circular letter was sent to 115 schools pointing out the importance of a high-grade milk, especially where children were concerned. Thirty-two schools replied, of which only 4 were getting milk from tuberculin-tested herds and from dairies equipped with a cooler and steriliser. During recent years a supply of free milk has been put at the service of needy and ill-nourished children under a scheme organised by the Government with the help of the local health authorities, but of 88 local authorities only 17 supplied any milk from tuberculin-tested herds. The Society has drawn the attention of the Government to the difficulties put in the way of the production of clean milk by the high tariff on the importation of seamless tin ware, a commodity not manufactured in Ireland. Some concession was made by the Government in the case of creamery cans but none in the case of pails and strainers. The society has issued a useful memorandum on the Clean Milk Bill which has now passed its second reading in the Dáil.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 17TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 3904; diphtheria, 1761; enteric fever, 23; acute pneumonia (primary or influenzal), 853; puerperal fever, 44; puerperal pyrexia, 115; cerebro-spinal fever, 11; acute poliomyelitis, 14; acute polio-encephalitis, 3; encephalitis lethargica, 7; dysentery, 22; ophthalmia neonatorum, 103. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 26th–27th was as follows: Small-pox, 0; scarlet fever, 1949; diphtheria, 2089; measles, 190; whooping-cough, 173; puerperal fever, 17 mothers (plus 6 babies); encephalitis lethargica, 267; poliomyelitis, 9; "other diseases," 280. At St. Margaret's Hospital there were 14 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or enteric fever, 3 (0) from measles, 6 (1) from scarlet fever, 8 (5) from whooping-cough, 51 (11) from diphtheria, 36 (17) from diarrhœa and enteritis under two years, and 39 (6) from influenza. The figures in parentheses are those for London itself.

Leeds, Manchester, and Wakefield each reported 3 fatal cases of diphtheria, West Ham and Sunderland each 2. Influenza was credited with 5 deaths at Birmingham, not more than 2 in any other large town.

The number of stillbirths notified during the week was 238 (corresponding to a rate of 37 per 1000 total births), including 37 in London.

CORRESPONDENCE

A CHRISTMAS APPEAL

To the Editor of THE LANCET

SIR,—In October, by your courteous permission, I was able to make an appeal to your readers for contributions towards our Christmas gift fund. I do not wish to labour the distress which unfortunately exists, for it is well known to all. The response to my appeal to date is £126 4s., a sum far short of what we need. I am confident that it will be the desire of the profession that we should distribute gifts to each of the 650 beneficiaries on our books. May I ask once more for a generous response and as soon as possible, so that when we sit down to our comfortable dinners we may know that some comfort and pleasure has been given to our own poor people. Donations should be sent to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, London, W.1.

I am, Sir, yours faithfully,

THOS. BARLOW,
President, Royal Medical Benevolent Fund.

Nov. 26th.

FITNESS FOR PUBLIC SERVICE

To the Editor of THE LANCET

SIR,—I was much interested in the letter in your last issue from two sanatorium medical officers, and in support of their plea would like to record my own experience.

Four years ago I was treated for pulmonary tuberculosis by artificial pneumothorax plus division of adhesions by cautery and diathermy; the disease was arrested and two years ago the pneumothorax fillings were discontinued. Since then—and indeed for most of the first two years—I have been at work, and I have no physical signs other than those of fibrosis. Yet I find it quite impossible to obtain work with a public authority. I was elected to a post under the local authorities of a large city, but was immediately dismissed after I had told the medical examiner my history—though he could find only the signs of fibrosis. When I suggested that I should not join the superannuation scheme I was told that this was impossible, since it was of "statutory significance." It is certainly of great personal significance to any medical man who is an arrested case of tuberculosis that, with a very few exceptions, the only career open to him is that which is least suitable to him—namely, general practice.

But if we look at this question, as we should, from the point of view of the State, is the present state of affairs the most beneficial possible? Quite apart from the fact that many patients gain experience of tuberculosis during the period of their treatment and are especially qualified to work as tuberculosis officers, &c., as was permitted until a short time ago, we must consider the question, Is the State going to benefit if this class of doctor is forced to take up work more likely to cause a breakdown—because the work suited to him from the point of view of regular hours and minimum amount of night work is now closed to him?

If it is true, as your correspondents say, that "this fund is a *retiring* and not a sickness benefit fund," it would surely be advantageous to the public authority if the persons receiving pensions were to die as soon as possible after ceasing work. The "first-class life" would be a disadvantage from the public point of view. But is not sickness benefit usually included in these schemes? If it is, an alternative to the increase of contributions from ex-tuberculous patients would be a stipulation that they should receive no salary during absence from duty caused by tuberculosis. This plan, however, might be difficult in operation and lead to disputes. My own feeling is that the best solution to the present problem would be, in the words of your previous correspondents, the use of "clinical judgment, instead of rule-of-thumb rejection."

I am, Sir, yours faithfully,

"EX-A.P."

Nov. 26th.

UNQUALIFIED RADIOLOGY

To the Editor of THE LANCET

SIR,—The time has surely come when steps should be taken to prevent the use of X ray apparatus by those whose capabilities are inadequate. The present legal position is that anyone may purchase and use equipment which is, as is well known, a potential source of danger both to patient and to operator. Thus it is possible for any individual to employ X rays for diagnostic and therapeutic purposes without having the necessary anatomical, pathological, and medical knowledge. Can it be right that a radiographer (however skilled he may be as a technical worker), a chemist, or an engineer should be legally empowered to express an opinion as to the evidence of a pathological process or to expose a patient to a beam of X rays for purpose of treatment? It is of course recognised that members of the Society of Radiographers undertake that they will not interpret radiograms and that they will not carry out radiation therapy except under the strict supervision of a qualified medical practitioner, but there are may quasi-radiographers who are not members of this society and who therefore are *not* bound by such an undertaking.

Radiographic interpretation and the determination of X ray dosage call for very skilled judgment, but it is suggested that such is not among the attributes of many who succumb to incautiously phrased advertisements which infer that efficient radiological practice requires nothing more than the acquisition and operation of a piece of apparatus.

The remedy appears to lie in the hands of the general members of the medical profession. The assistance afforded to them by radiology may be immense, but only when they will recognise that the whole subject is one requiring endless study, subsequent to a thorough training in general medicine, with especial reference to pathology and physics.

We are, Sir, yours faithfully,

G. SHEARER,
President of the British Institute of Radiology.

J. DUNCAN WHITE,
Chairman of the medical committee of the Institute.

Welbeck-street, W., Nov. 26th.

MIDWIFERY IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—As a rural practitioner who has practised midwifery single-handed for over forty years let me say how deeply interested I was in reading Dr. Dale Logan's contribution in your issue of Nov. 17th (p. 1141). It deserves to be printed in letters of gold. I feel sure every word he says will be welcomed and believed to be true by every general practitioner who has engaged in midwifery these past thirty years or so.

Dr. Logan is quite right when he says that press publicity, plus our local authorities and obstetric experts, have done their best to frighten general practitioners from doing any midwifery at all. All the blame for puerperal morbidity and mortality was

laid on their shoulders by these people. Such expressions as "dirty doctors" and "dirty nurses" were freely used, and I remember reading in a medical journal that it would be a lucky thing for the lying-in woman if the baby's head was always on the perineum when the doctor arrived! This was some years ago when the stir first began. Since then big strides have been made—antenatal clinics, a large increase in lying-in beds in hospitals, and springing up of fine maternity homes up and down the country; yet in spite of it all, the maternal morbidity and mortality has increased rather than decreased. So, I ask, what about it?

Is it not now said the safest place for a woman to be confined in is her own home? Rightly or wrongly, it is my opinion that through all time certain women will die during or after confinement, do what we may. If every lying-in woman was put into a maternity home and attended by expert doctors and nurses, I still believe there would be deaths. Try how we may, we are not going to get a 100 per cent. recovery from childbirth. Almost the only death from puerperal fever I have seen occurred in a young healthy country girl who had a perfectly normal confinement in a very clean cottage amidst open fields and who never had a vaginal examination.

I am, Sir, yours faithfully,

ROBT. A. WELSH, M.B.

Felton, Northumberland, Nov. 22nd.

ROBERT MORANT

To the Editor of THE LANCET

SIR,—Your leading article on Mr. Bernard Allen's excellent and most welcome Life of Sir Robert Morant must appeal strongly to those who came in touch with him during the eight strenuous years in which he was getting the health insurance scheme under weigh. At that time it was not so widely appreciated as it is now that he had the real interests of the medical profession at heart and wished to see it take a more influential position in the community. Many doctors who from a distance had viewed him as an over-riding bureaucrat came to know him as a sympathetic counsellor and friend.

To Morant public service in pursuit of noble aims was a joyous and romantic adventure, and, as with the mountaineer, increasing difficulties roused an increasing exhilaration of spirit. He left nothing to chance. Such details as the seating arrangements at a conference, the doors through which entrances and exits were to be made, the exact words to be used in delivering a message—all these were thought out and insisted upon. He foresaw everything and provided for everything. His methods of work were all his own. He never sat down to write, but stood at a high desk, or reclined on a long couch—both specially adapted to his great height—or strode about his room dictating rapidly with characteristic avoidance of official jargon. "Don't use such expressions," he would say, "they are too official." With his staff he used what he described as an "oral shorthand," in which, for example, the word "sputum" denoted "arrangements made by a local health authority for the gratuitous examination of pathological specimens submitted for the purpose by medical practitioners"; and a discussion carried on in such terms made considerable demands upon the attention of his hearers. He liked to have a subject explained to him "in two sentences." To work at the office long after the usual time of departure was to him an unfailing source of satisfaction, and he had difficulty in understanding why this feeling was not more widely shared. When the maroon announced the beginning of the Armistice he was returning with a colleague to the office of the Insurance Commission from a conference at another Government department. He stopped and said: "That means the end of the war"; and, as the excited crowds rapidly gathered in the street, he added: "Well, we can't celebrate it in any better way than by going back to the office and getting on with our work." Creature comforts did not appeal to him. His usual luncheon, when he found time to think of it, was a glass of milk and a bun; he never took afternoon tea and rarely smoked. His joy in work was infectious. "Working with Morant is much more fun than playing with anyone else," said one of his colleagues to me, and this was the experience of many.

Morant took a personal interest in his staff, which was revealed by acts of kindness that inspired many a recipient with a lifelong devotion. Around him has grown up a crop of legend and reminiscence; and when those who worked with him find themselves together their talk sooner or later is of him as a supremely great and much loved chief.

I am, Sir, yours faithfully,

G. F. MCCLEARY,

Late Principal Medical Officer, National Health Insurance Commission (England).

Gerrards Cross, Nov. 24th.

THE DETECTION OF THYROTOXICOSIS

To the Editor of THE LANCET

SIR,—Dr. Robertson and Dr. Wilson have attempted in your last issue (p. 1158) to extend the use of the impedance-angle test for the diagnosis of thyrotoxicosis to a method for assessing the clinical progress of the disease. It is necessary to be quite clear that the I.A. is not a measurement of any physiological process which is identical with basal metabolism and does not vary directly with the B.M.R. It is for this reason that alterations of B.M.R. due to exercise or the influence of sympathetico-mimetic and parasympathetico-mimetic drugs find no echo in the I.A. tests. I have found that very marked disturbances of metabolism in febrile states produced by Sulfosin injection leave the I.A. unaffected. Nor is any change in I.A. due to thyroid medication concomitant with alterations in B.M.R. Any change which takes place in the I.A. is a slow change, and though in my experience I have found an invariable decrease in I.A. after partial thyroidectomy, the shortest interval in which a very marked change has been manifest has been 10 weeks.

Like Robertson and Wilson I have failed to establish consistent changes of I.A. in myxœdema, although it is not clear why this condition presents a special case. In 5 cases of untreated myxœdema I found 3 within normal limits and 2 negative. In 104 cases of thyrotoxicosis I found positive results in 86 cases (83 per cent.), 15 fell within normal limits, and 2 were negative. In the 8 cases which they examined, Robertson and Wilson found positive results. This has also been confirmed by Holiday and Campbell Smith (THE LANCET, July 21st, 1934, p. 139) in a series of 32 cases. These observers found that the deviation of the I.A. from the normal mean is much more marked in cases they define as severe than in those defined as mild. My own experience supports this, and some of the mild cases contribute to that portion of all cases (17 per cent.) which do not give positive results.

It is obviously desirable that the mean for normals should be established on much larger groups (e.g., 500 or more) and when this has been done some modification of the published figures may

be necessary. On a group of 35 normal women I found a standard deviation of 0·010. The group is admittedly small, but the figure is confirmed by Holiday and Campbell Smith (loc. cit.) who on a different group of normal women found the standard deviation to be 0·012.

The clinical value of the I.A. appears to be that in 86 per cent. of cases of thyrotoxicosis it gives a positive result that can be obtained in a few minutes with none of the inconveniences to patient and observer involved in a B.M.R. estimation. For this reason the test is extremely useful for out-patient work. I am, Sir, yours faithfully,

M. A. B. BRAZIER.

London County Council, Mental Hospitals Department, Central Pathological Laboratory, the Maudsley Hospital, London, S.E., Nov. 23rd.

*** We take the opportunity of correcting a misprint in Mr. Cecil Joll's letter on this subject last week. On line 12 the words "a portion" should read *a fortiori*.—ED. L.

PROTEIN SHOCK THERAPY IN TYPHOID

To the Editor of THE LANCET

SIR,—The observations of Dr. Sinclair Miller and Dr. Manson-Bahr [1] on protein shock in the treatment of undulant fever prompt me to offer my experience of the same remedy in typhoid fever. There are very few cases of this disease in Toledo, and I have treated only five; but a brief report may lead others to try the method on a larger scale.

The only paper on the subject I have discovered is one by Urioste and co-workers [2] in Montevideo, who refer to 195 cases. They produced shock apparently by the intravenous injection of Dessy antityphoid vaccine, and often they found it necessary to repeat the shocks several times, for they state they "produced a total of 282 intense shocks in 82 patients" in one hospital, "and 200 intense shocks in 91 patients" in another. Unfortunately they do not give the final results, but in the whole series of shocks "only two accidents resulted." In the course of the paper they say:—

"The symptoms of shock following the intravenous injection of the vaccine appear after from 30 to 180 minutes, characterised at first by chills which may last for about one hour and which sometimes are recurrent. They are followed by a rise in temperature to 104°, 106° F., or even higher. Subsequently the patients regain vigour and perspire profusely. Next follows arterial hypertension and humoral modification. Subsequently the temperature drops suddenly. The immediate result in some cases is complete apyrexia and the beginning of recuperation."

"Shock was always accompanied by a marked polyuria. Phenolsulphonphthalein was eliminated in only scarce quantities before the shock, but elimination after the shock was from 35 to 70 per cent. The leucopenia in general was not changed by the shock. The blood cultures showed the changes caused by shock inasmuch as they became rapidly negative. In cases in which the culture remained positive in spite of the clinical improvement and apyrexia it served as an indication that the shock had not been sufficiently intense. Agglutination showed remarkable change. Before the shock agglutination was weak, while after the shock it was strong. This indicated a marked bacteriolysis. Ardin-Delteil, Negré, and Raynaud who studied the effects of vaccine therapy showed that antibodies and bacteriolytic properties appeared much earlier and were more active than in cases in which no vaccine had been used."

In their description of symptoms of shock the Montevideo physicians do not mention depression. Their comparative studies are interesting and very commendable.

In the winter of 1927 and 1928 I had the privilege of seeing the sixty-seventh and sixty-eighth cases of typhoid treated by protein shock under the direction of Dr. Karl Stejskal in Vienna. On the third day the fever had disappeared, the patients were feeling fine, asking for something to eat, and to all intent and purpose were well. Dr. Stejskal reasoned that if the person with typhoid, with a leucopenia, could have his blood picture changed to a marked leucocytosis, he should improve. To accomplish this, he injected 5–10 c.cm. of sterilised milk intramuscularly. The usual result was a rise in temperature to 103° to 105° F., sometimes a chill and marked elevation in leucocyte count, ranging to 12,000 to 20,000. If the patient did not show this reaction, he gave intravenously 0·5 to 1·0 c.cm. of lysed typhoid vaccine known by the trade name of Typhin. This gave a more rapid and equally definite response. The rise in temperature was followed by a drop in temperature to normal or sometimes below, so that 20–24 hours after the injections there was often considerable depression. To obviate this depression, 24 hours after the protein injection he gave intravenously 50 c.cm. of a 50 per cent. dextrose solution, in which was taken up strychnine nitrate gr. 1/40, dissolved in a small amount of water. This usually finished the treatment, the patient becoming more comfortable, regaining the normal alertness and appetite, with no further rise of temperature. The whole procedure usually required three days. After this the leucocyte count slowly returned to normal.

If a fairly good-sized vein can be found, a 20-gauge needle used, and the solution of dextrose given slowly, there will be practically no danger from thrombosis. In my cases I have used sterile milk, typhoid vaccine, and typhin. In my hands sterile milk has been least satisfactory.

Dr. Stejskal found that this treatment worked well if he secured the patient within two weeks of the onset of the disease. If a longer time had elapsed the patient did not respond so well, and sometimes the temperature did not remain normal but began to rise on the second or third day after treatment. In those which had gone only two or three days over the two weeks, the temperature sometimes could be brought to normal by a second dose of dextrose, or protein and dextrose as before. He found that after the second week the best procedure was to use the typhin subcutaneously, daily or every other day.

In one of the papers on undulant fever [1] Dr. Manson-Bahr mentioned the rather severe depression following the protein shock treatment. Stejskal's way of preventing this, I think, is worth reporting independently of the typhoid therapy, as applicable in any case where protein shock is used.

The following cases are typical of the usual response to this treatment.

CASE 1.—Female, aged 18. Illness began on Jan. 26th. On the 31st, besides typical physical findings of typhoid, the blood count showed: red cells, 4,650,000; white cells, 4750; and hæmoglobin, 86 per cent. Agglutinations: typhoid 1:100, positive; para. A 1:100, negative; para. B 1:100, slight agglutination; *B. melitensis* 1:100, negative. On Feb. 4th at 2.30 P.M. typhoid vaccine 75,000,000 was given intravenously, and by 10 P.M. the temperature was 105°, with pulse-rate 104 and respirations 28. Next day at 10 A.M. she had glucose (50 c.cm. of a 50 per cent. solution), plus strychnine nitrate gr. 1/40, intravenously. That night temperature subsided to 99°. Feb. 7th: temperature a little higher. Feb. 8th: 1.40 P.M., mixed typhoid-para-typhoid vaccine 50,000,000 intravenously; 4 P.M., temp. 101·2°; 8 P.M., temp.

[1] THE LANCET, 1933, i., 1177, 1178, and 1187.
[2] Urioste, J. P., Piaggio Blanco, R. A. and R. O.: Arch. Uruguayas de méd. cir. y espec., 1932, i., 297.

104°, pulse 102, resp. 22; 9.30 P.M., temp. 104·2°. After this there was a gradual fall in temperature. On the 9th at 9.50 A.M. glucose 50 per cent. solution (50 c.cm. plus strychnine nitrate gr. 1/40) was injected intravenously. Temperature gradually subsided. Thirty-six hours later temp. 96·4°, pulse 80, resp. 20. There was no further elevation of temperature; appetite returned promptly, there were no complaints, and recovery was complete.

CASE 2.—Male, aged 44. Entered hospital Oct. 11th, 1928. Symptoms began one week before admission, with sudden chill followed by slowly rising temperature. Noted general weakness, had some nausea and vomiting, and was slightly constipated, and during this week white blood-cells had ranged from 5200 to 6800. Temp. 99°–101°. Developed rose spots and other characteristics of mild typhoid. Agglutinations: para. B, positive; para A, negative; typhoid, negative; *B. melitensis*, negative. On the afternoon of admission, 5 c.cm. of Lactogen was given intramuscularly. The following morning the patient showed no reaction. There had been no increase of temperature and only a slight increase in the white cells. Typhin (0·5 c.cm.) was then given intravenously, and this was followed in four hours by severe chill and rise in temperature to 104°. Twenty-four hours later the white cells numbered 18,050. Twenty-four hours after the injection of typhin, 40 c.cm. of 50 per cent. dextrose and strychnine nitrate gr. 1/40 was given intravenously. This was followed by a sharp fall in temperature and prompt recovery. There was no depression. Culture from stools five days later was negative. No other treatment was given.

CASE 3.—Male, aged 19. Entered hospital Sept. 11th, 1929. About two weeks before began to feel weak and drowsy. On admission white cells, 5000 to 6000. Mild typhoid suspected. Agglutination tests: para. A 1:100, negative; para. B 1:100, negative; typhoid 1:100, negative; *B. melitensis* 1:100, positive. On Sept. 11th lactogen 5 c.cm. was given intramuscularly. Six hours later temp. 100·4°, pulse 80, resp. 20. Temperature gradually subsided. On the morning of the 12th the white cells numbered 5650, and at noon typhin 1 c.cm. was given intravenously. 1.50 P.M.: temp. 103·2°, pulse 116, resp. 28; severe chill. 2.50 P.M.: temp. 104°, pulse 104, resp. 24. 3 P.M.: white cells 8400. 3.20 P.M.: temp. 104°, pulse 128, resp. 26. Temperature gradually subsiding. On the 13th, at 7.30 A.M., temp. 98·4°, pulse 76, resp. 18. Glucose (50 c.cm. of 50 per cent. solution) plus strychnine sulphate gr. 1/60, intravenously. 4 P.M.: temp. 101°, pulse 72, resp. 16. Following day: temp. 98·2°. No further elevation. Complete recovery. Six months later agglutination tests for *B. melitensis* were negative.

The advantage of the vaccine treatment is that it cures the patient before he drifts into the stage where there is danger of perforation and hæmorrhage. Cultures from the blood and stool may become negative in an almost incredibly short time; often a patient may return to his home in a week after treatment is instituted. The disease can be cut short before there has been much loss of weight, strength, and vitality. Typhoid vaccine, given subcutaneously in sufficiently large doses every other day, although it undoubtedly lessens the number of complications and relapses, does not reduce the classical duration of the disease. The Stejskal method, on the other hand, seems to stop the disease and rids the patient of typhoid bacilli.

The South American authors mentioned "two accidents" in 195 cases but did not describe them. I myself have observed no unfortunate effects, and Stejskal noted none in his first 69 cases. I may mention that in the past 24 years I have used many different kinds of vaccine on many cases of many sorts, and have noted an anaphylactic reaction in only two—one patient responded with a severe attack of asthma followed by hives, another developed hives with joint pains. Both were controlled by adrenaline.

I am, Sir, yours faithfully,

Toledo, Ohio, U.S.A. C. E. PRICE, M.D.

LONDON UNIVERSITY AND ITS MEDICAL SCHOOLS

To the Editor of THE LANCET

SIR,—Sir Ernest Graham-Little's letter in your last issue comes at a time when revision of the medical curriculum is being widely discussed. The first difficulty in London University arises with the first M.B. examination. I have never been able to understand why this examination is not interchangeable with that for the intermediate science. The length of time allotted to both courses is the same, and yet the first M.B. is definitely considered to be of a lower standard. The first M.B. ought to be the chemistry, physics, zoology, and botany of the intermediate science examination. The student who changes his mind would then be able to go on with a science degree and not have to start again at the beginning as at present.

The second M.B. is another problem. The minimum course of study for a first degree in London University takes three years. The normal time for the second M.B. is two and a half years. If this examination was a degree examination the course of study would have to be lengthened by three to six months. Most medical students in this university are poor men and cannot afford the time. A few are able to spend another year and take the B.Sc. in physiology, chemistry, or human anatomy, but this number is very small.

A degree in medical sciences on the lines of the tripos at Cambridge would undoubtedly encourage students to spend an extra period of three or six months and would add to the popularity of the University. I have no doubt that the difficulties in arranging this on the lines suggested by Sir Ernest can be overcome.

I am, Sir, yours faithfully,

E. E. D. GRAY, M.D.

Teddington, Middlesex, Nov. 26th.

THE MICROSCOPY OF VIRUSES

To the Editor of THE LANCET

SIR,—An annotation under this title in your issue of May 19th (p. 1073) mentions several points in criticism of communications by myself and my co-workers. Would you therefore let me add the following explanation.

(1) In regard to the discovery of the elementary bodies of zoster you say that we have ignored the fact that Paschen had already described and figured these. The part of the *Zentralblatt für Bakteriologie* containing Prof. Paschen's article is dated December, 1933, and we first became acquainted with the work after that date, while our original paper in Japanese was issued in July, 1933.

(2) With reference to the method of demonstrating elementary bodies by the use of an acid dye as a mordant, it is true that in our communication on the subject to the Japanese Pathological Society in April of this year we overlooked Craigie's paper. Apart from the fact that Craigie used the mercurial dye, mercurochrome, while we used eosin, a comparison of the methods will, we think, show that our work was an independent outcome of investigations on the staining of elementary bodies, certain of which were reported in 1932.

(3) You raise doubts as to the susceptibility of rabbits to the virus of varicella. In 1932 we recorded the establishment of three strains of varicella virus in rabbits by intratesticular inoculation with the contents of vesicles from patients. This virus differs from virus III. of Rivers, both in respect of cross-immunity tests and also species virulence—the varicella virus can be transmitted to the guinea-pig, cat, fowl, pigeon, and ape, as well as to man and rabbit.

(4) Our statement that the viruses of fowl-pox and molluscum contagiosum multiply preferably in the nucleus is characterised by you as "almost certainly incorrect."

Our co-worker Tsunesaburo Fujino will before long deal with this subject in detail in the *Japanese Journal of Experimental Medicine*.

(5) You point out that the estimate of 0·25 μ for the size of the herpes simplex body is not in keeping with the work of Bedson and Elford, Perdrau and Smith. It is scarcely likely, however, that close agreement should be reached when the size of such particles is determined by different methods, especially since staining procedures may be expected to cause an apparent increase in their size.

In conclusion, we feel encouraged in our work by the frank expression of your view that the elementary bodies which have now been described in so many virus diseases really represent the causal agents. Recently we have established in the rabbit a strain of pemphigus pruriginosus in confirmation of the original report of Urbach and his co-workers, and we have stained elementary bodies closely resembling those of herpes, although differing somewhat in their arrangement. Similar success has been obtained with a strain of the virus of epidemic encephalitis of Japan in the rabbit and the monkey. Both of these observations have been published in Japanese and are in course of translation.

I am, Sir, yours faithfully,

The Bacteriological Institute, Osaka University, Japan, Nov. 5th. J. TANIGUCHI.

LIVER THERAPY IN ANÆMIA

To the Editor of THE LANCET

SIR,—It is to be regretted that in none of the American and English publications by investigators, authors, and clinicians has mention been made of the early work carried on (1910–12) with liver in anæmia—liver given orally, liver juice, and liver extract intraperitoneally and hypodermically—by Pietro Castellino and Alfonso Pirera, of the University of Naples. To these Italian observers and clinicians must go the credit for first discovering the value of liver in anæmia. To the American investigators Whipple (1920, 1925), Minot and Murphy (1926) goes the credit for scientifically establishing liver therapy in anæmia as a universal method. Prof. Pirera published his report in *Il Tommasi* (Napoli) (1912, vii., 601, 625). The late Prof. Castellino commented on his early work (with his teacher and master, Prof. Salvioli of Genoa) on liver in anæmia before the Thirty-fifth Congress of Internal Medicine, at Genoa, on Oct. 24th, 1929. Castellino also refers to the value of liver in anæmia in his paper on "Nuove vedute sulle funzioni del fegato" (Nuova Vita, 1912, iii., No. 15). Further references are Folia Medica (Napoli), 1930, xvi., 7; Ricerca Scientifica (Roma), 1933, iv., 413; Riforma Medica (Napoli), 1929, xlv., 41; Policlinico (Roma), Dez. Prat., 1929, xxxvi., 709, 1685.—I am, Sir, yours faithfully,

Camden, New Jersey, U.S.A., Nov. 5th. HYMAN I. GOLDSTEIN, M.D.

COLOUR-BLINDNESS

To the Editor of THE LANCET

SIR,—The Medical Research Council has issued a report on colour-blindness in which it is stated that the apertures of two lanterns bearing my name differ. They were made by different makers, and I can find no evidence that the defective lantern was ever examined by me. It was made by makers whom I gave up as they sold lanterns without submitting them to me. Obviously I cannot be responsible for a lantern I have not examined and certified as accurate. I sometimes have to reject a whole batch. There are lanterns bearing my name which are grossly inaccurate.

I am, Sir, yours faithfully,

Board of Trade, London, S.W., Nov. 23rd. F. W. EDRIDGE-GREEN.

ASTHMA REVIEWED

To the Editor of THE LANCET

SIR,—The leading article in your last issue is called for at present. Asthma was long regarded as a "nervous" affection, and this was owing to the ignorance which has, in the past, given the same title to other diseases which we now know to be produced by morbid agencies. The intrinsic cause of asthma is unknown, although every variety of substances is able to call it forth. Protein supersensitiveness is physiological, and it is only in the greater delicacy of this supersensitiveness that asthmatics differ from normals. Constant searching after substances which may cause supersensitiveness is of little use, as most asthmatics are sensitive to various and entirely different substances, such as horse hair or lobster. How then can treatment with one of these substances be said to be "specific"? There is really no specific treatment for asthma, as we are ignorant of its cause. The Prausnitz-Küstner test remains, and the skin reaction remains, after courses of these so-called specifics.

Prof. Prausnitz at the meeting of the Pathological Society of Manchester on Nov. 14th (reported on p. 1167 of your last issue) described the Prausnitz-Küstner reaction as an urticarial wheal; but in the case of eczema the characteristic lesion of the disease is not produced, which shows that there is another agent at work. Then what about the number of asthmatics who show neither inheritance nor supersensitiveness, and the status asthmaticus? Prof. Prausnitz said treatment must be made by desensitising with the specific substance or a non-specific substance—e.g., peptone.

I am, Sir, yours faithfully,

Harley-street, W., Nov. 26th. A. G. AULD.

ULCERATION FOLLOWING GASTRO-JEJUNOSTOMY

To the Editor of THE LANCET

SIR,—I should like to thank Mr. Harold Edwards for his reference to my note (published in your issue of Nov. 10th), and also for the interesting account which he gives of lesser curve ulcer of the stomach occurring 11 years after gastro-jejunostomy for duodenal ulcer. It may be that undue prominence was given in my note to the interval that had elapsed between the time of operation and the recurrence of ulceration, but what I really wished to stress was the fact that ulceration had recurred in the *duodenum*, and not in the stomach, after gastro-jejunostomy had been performed. The majority of surgeons are agreed that, provided the gastro-jejunostomy be done efficiently, the duodenal ulcer heals, and in the event of further ulceration, whether it be due to inefficient operation or high acidity, or anything else, the ulceration occurs near to or at the site of anastomosis. I considered the condition which I reported was extremely rare, for I had nowhere seen any mention of a similar case.

Mr. Edwards's case is undoubtedly unusual in that the patient remained free from ulceration for 11 years, but lesser curve ulcer of the stomach (as distinct from anastomotic ulcer) following gastro-jejunostomy for duodenal ulcer does occur. Several of such cases have been reported by Mr. A. James Walton, and also by Dr. George Vilvandré.[1] Personally I have had experience of one definite case of this condition, and another case in which I am afraid

[1] Trans. Med. Soc. Lond., 1934, lvii., 241; see also THE LANCET, 1934, i., 890.

the evidence was not at all clear that the original operation had been done for duodenal ulcer. The first case was interesting because the anastomosis was so much the "no-loop" variety that I considered it difficult, if not dangerous, to undo and reconstruct. The ulcer was on the posterior surface of the stomach, proximal to the stoma, and was penetrating the pancreas. After excising it and closing the opening in the stomach, I performed a partial gastrectomy distal to the anastomosis. The patient remained free from stomach trouble for more than three years, but I have since lost touch with him.

The possible coexistence of chronic gastric and duodenal ulcer must not, of course, be overlooked. It appears to be much commoner on the continent, particularly in Germany, than it is in America or in England; in Schmieden's clinic in Frankfurt, I believe, the relationship is 1 to 4, and in some clinics in Germany even 1 to 1. According to Konjetzny, it would seem that most cases of duodenal ulcer in Germany are associated with ulceration and hæmorrhagic gastritis involving the antrum of the stomach. It is these facts, in combination with the fear of gastrojejunal ulceration, which have led German surgeons to adopt gastrectomy in preference to gastrojejunostomy as a treatment for duodenal ulcer.

In the cases reported by Dr. Vilvandré there was no evidence whatever of previous gastric ulceration, and, of course, in the one described by Mr. Edwards, the question does not arise. In the event of operation, however, it would be interesting to know whether the ulcer in this case proves to be malignant.

I am, Sir, yours faithfully,

MICHAEL J. SMYTH.

Wimpole-street, W., Nov. 27th.

MOVING RADIOGRAMS

To the Editor of THE LANCET

SIR,—With further reference to my recent work on X ray cinematography, to which you have kindly made reference several times during the year (THE LANCET, 1934, i., 372, 975), I am now able to obtain a cinematograph record of the electrocardiograph tracing and the heart's shadow simultaneously on the same film.

I am, Sir, yours faithfully,

RUSSELL J. REYNOLDS.

Harley-street, W., Nov. 24th.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

IN opening the one hundred and fortieth session of the Council on Nov. 27th, the President said:—

There has only been one breach in the ranks of our members past and present since our last meeting. Mr. Dolamore, who has been one of the additional members appointed under Section 16 of the Dentists Act, 1921, and who succeeded Sir James Hodsdon in 1929 as chairman of the Council's Dental Education and Examination Committee, has met the fate of many a distinguished public servant at the poll. His quiet efficiency and whole-hearted service will not be forgotten by his old colleagues. Mr. Rilot takes Mr. Dolamore's place as one of the three additional members. He is no stranger to us, for in 1931–33 he acted with Mr. Farquhar Macrae, now secretary of the recently established Medical Council of India, as Deputy Visitor of Dental Examinations. The others of us whose presence here depends on a popular vote have been more fortunate. Sir Henry Brackenbury and Mr. Bishop Harman have been returned by large majorities, and the electors of Ireland and Scotland have been sufficiently satisfied with the work done by Dr. Kidd and myself, and by Mr. Sheridan and Mr. McGowan as additional members, to honour us with an uncontested election.

The English elections draw attention once more to the desirability of some change in the methods of election of our direct representatives. By the 1886 Act, which established direct representation, three members were allotted to England and one each to Scotland and Ireland; and Section 10 (1) (*c*) enables the Council to represent to the Privy Council "that it is expedient to confer on the registered medical practitioners resident in any part of the United Kingdom the power of returning an additional member to the General Council." Under the provisions of this section an additional member was allotted to England in 1909 and again in 1931, so that England has now five direct representatives. The Crown members and the representatives of Universities and Corporations "shall be chosen and nominated for a term not exceeding five years" (Act of 1858, Section 8). Direct representatives (Act of 1886, Section 8) "shall be elected to hold office for the term of five years, and shall be capable of re-election, and any of them may at any time resign his office by letter addressed to the President of the General Council, and upon the death or resignation of any one of them some other person shall be elected in his place." There are no Chiltern Hundreds or Stewards of the Manor of Northstead for a member of the General Medical Council who wishes to test the feeling of his constituents on any vexed question, and Parliament in 1886 seems to have taken it for granted that direct representatives were immortal. It was not long before difficulties arose.

At the election held in November and December, 1896, Dr. R. R. Rentoul and Mr. George Brown were elected, and Dr. J. G. Glover was re-elected. Sir Walter Foster and Mr. Wheelhouse did not seek re-election. On Sept. 1st, 1897, Dr. Rentoul resigned his seat, and at the by-election held in October Mr. Victor Horsley was elected. On Sept. 25th, 1902, five years later, Sir Victor Horsley was re-elected by a very large majority. When the time approached for a general election in November, 1906, Sir Victor Horsley, whose terms of five years dated from October, 1897, resigned his seat in order to save the Council the expense of a second election such as was necessary in 1902. The president in his address on Nov. 27th, 1906, said that "but for his forethought it would have been necessary under the provisions of the Medical Act, 1886, to hold a by-election, not only in 1907, but in every fifth year thereafter. His resignation at the present time has rendered it possible so to arrange matters that, now and henceforth, a general election of three English members every five years will suffice." That sanguine hope was not realised; death was very busy among the direct representatives, and of the twelve elected since 1907 four died during their period of service. The result of the operation of the sections of the Act to which reference is here made is that the Council are put to the cost of *four* separate elections for the purpose of electing five representatives.

There are two further matters more concerning others rather than ourselves.

First, the terms of the 1886 Act make it impossible for us to give a favourable answer to a request from

any of the Dominions for recognition of their Diplomas in Public Health.

Secondly, the Medical Council Act, 1862, Section 3, lays down in essence that on the date of publication of the British Pharmacopœia it shall immediately become official. This is obviously inconvenient to manufacturers, and though arrangements have been made during the preparation of the last two Pharmacopœias to give confidential access to the proofs, there are interests which would be better satisfied if a period of three to six months intervened between the date of publication of the volume and that of its becoming the official Pharmacopœia. I have been in communication with the Lord President of the Council regarding the difficulties, and am hopeful that Parliamentary action may be taken to remove them.

Before we meet again King George V. will have reigned over us for twenty-five years, and his subjects will celebrate His Majesty's Silver Jubilee. The Council will, I am sure, following precedent, desire to present a Loyal Address.

Under the supervision of the treasurers the window behind me, the gift of Sir Donald MacAlister, has been brought up to date. The erection of new buildings on the other side of the street suggests that in future this Chamber will be cooler on summer afternoons.

There will be no debate on Medical Education this session. The committee appointed by the Council on June 2nd have been busily engaged in studying the abundant literature on the subject: each member has contributed a memorandum on what he considers the salient points; and a gratifying measure of agreement has been disclosed.

I feel sure that all members will approve that I should refer here to the loss we have sustained by the death of our house officer, William Andrew Scott. We have all appreciated the quiet efficiency of his service during more than nineteen years. Members will hear with satisfaction that the treasurers have made arrangements under which Mrs. Scott's services will be retained.

Our sympathies go out to Sir Farquhar Buzzard, who is waging a personal fight with enteric fever. The latest information is that he is making good progress, and may be regarded as convalescent. We hope to welcome him back in May himself again.

The customary vote of thanks to the president was proposed by Prof. Sydney Smith and seconded by Dr. J. M. Beattie.

The Council received official notice of the appointment of Dr. Charles Frederick Rilot, L.D.S., as an additional member to the Council by the Privy Council under Section 16 of the Dentists Act, 1921: Dr. Rilot was introduced by Mr. E. L. Sheridan.

The Council then proceeded to the consideration of reports submitted by the Dental Board of the United Kingdom.

BRITISH ORTHOPÆDIC ASSOCIATION

THE annual meeting of this association was held in London on Nov. 2nd and 3rd, under the presidency of Mr. HARRY PLATT (Manchester). Clinical programmes were arranged at St. Bartholomew's Hospital by Mr. R. C. ELMSLIE and his colleagues, and at the Lambeth Hospital by Mr. G. F. STEBBING. The Robert Jones gold medals were presented to Mr. R. W. BUTLER (London) and Mr. H. J. SEDDON (London) whose essays on the subject of Pott's paraplegia were read in opening the first discussion.

Pott's Paraplegia

Mr. BUTLER said that in tuberculous disease of the spine three clinical types of paraplegia should be differentiated. The first type, "early onset of temporary paraplegia," was due to toxic and vascular reactions in the cord from the activity of tuberculous disease, and sometimes to compression of the cord by caseous granulation tissue. In the second type, "early onset of permanent paraplegia," the paralysis persisted after recovery of the tuberculous disease owing to avascular atrophy of the cord; it was attributable to prolonged compression of the cord by abscesses, to acute thrombosis of the vessels supplying the cord, to bony compression by pathological dislocation of the spine, or to compression by the displacement of sequestra. In the third type, "late onset of paraplegia," the paralysis might appear many years after apparent quiescence of the disease, and this type included 50 per cent. of the whole series of 193 cases. Late paraplegia was due to atrophy of a previously damaged cord as a result of prolonged or of fresh infection; bony compression was a rare cause and there was no evidence that chronic tuberculous meningitis was responsible for paraplegia at any stage.

Mr. SEDDON said that for every four cases of early onset of paraplegia which recovered there was one which failed to recover. Failure was due either to persistence of cord compression for too long a period, or to the sudden complications of vascular thrombosis or bony compression by dislocation. Treatment therefore was primarily conservative and included immobilisation and hyperextension. If some voluntary power remained the prognosis was excellent, but if there was complete loss of voluntary power recovery was improbable unless pressure was relieved during the first six months. If there was not spontaneous recovery within six months of onset, costotransversectomy and evacuation of the abscess was indicated. When the onset of paraplegia was sudden and paralysis was complete within a few days, bony compression should be suspected and relieved by hyperextension of the spine. Laminectomy was only indicated in cases exhibiting the spinal tumour syndrome (the neurological signs preceding the orthopædic sign), or in cases of posterior spinal disease. Cases of late onset of paraplegia should be treated conservatively, but in severe cases the removal of tuberculous material or of bony ridges, and combined laminectomy and spinal grafting should be considered. If there was complete motor paralysis for more than six months there was no likelihood of recovery.

In the brief discussion which followed Mr. G. R. GIRDLESTONE (Oxford) pleaded for the relief of pressure by costotransversectomy at an even earlier stage, and Mr. MCCRAE AITKEN (London) said that the pressure could be effectively relieved without actually removing bone, by dissecting between two transverse processes.

Transport of Back Injuries

Mr. T. P. MCMURRAY (Liverpool) said that in fractures of the spine advantage of face down transportation was that the postural movement necessary to reduce the fracture was instituted at once so that the risk of injury to the spinal cord was minimised. The disadvantages were such that patients suffered from shock and that lying on the face might embarrass respiration; there might be fractures of several ribs with danger of visceral injury. The speaker did not advocate any change in the existing teaching; first-aid workers could not be expected to diagnose fractures

of the spine and the act of turning patients over was dangerous.

Mr. McMurray's recommendation was supported by Mr. P. B. ROTH (London). It was opposed by Mr. R. WATSON JONES (Liverpool), Mr. MCKENZIE CROOKS (Nottingham), Prof. W. S. HAUGHTON (Dublin), Mr. H. O. CLARKE (Manchester), Mr. DAVIDSON and Mr. HOPE CARLTON (London).—Mr. Watson Jones said that St. John Ambulance men were already taught to turn these patients over, but they were instructed to turn them on to their backs and to lift them by a method which inevitably produced hyperflexion. If a patient with a fracture-dislocation was carried in this manner severance of the cord was inevitable. The association of rib and spinal fractures was so rare as to be negligible, and in any event the ribs were no more likely to be fractured in front than behind.—Prof. Haughton said that the diagnosis should not give rise to difficulty. If after a severe injury a conscious patient complained of pain in the back and inability to move one or both legs he should be lifted and carried face downwards.—Mr. Crooks reported a series of 50 cases of spinal injury; there was only one case with injuries to the ribs and that patient was more comfortable on the face than on the back.—Mr. Clarke said there could be no doubt that ordinary face uplifting was capable of producing paraplegia which did not previously exist. The speaker had personally witnessed a throw from a horse which caused fracture of the spine without paraplegia; the patient was turned and lifted by ambulance men and was paraplegic by the time hospital was reached. Death resulted from bladder infection.

Congenital Club-foot

Miss M. FORRESTER-BROWN (Bath) advocated repeated manipulation, splints, and plaster as the routine treatment for congenital club-foot, but said that many cases relapsed despite every care and attention. Open division of the tight structures on the inner side and at the back of the heel was often necessary, and in old cases an astragalectomy was sometimes performed. A rotation osteotomy of the tibia was a valuable procedure for persistent intoeing.

Mr. BRYAN MCFARLAND (Liverpool) said that open operations on the inner side of the foot were followed by scar tissue contracture, and sometimes the deformity relapsed. Tenotomy of the tendo Achillis was rarely indicated and was a dangerous procedure.—Mr. C. LAMBRINUDI (London) advocated early tenotomy of the tibialis anticus and posticus, but these procedures were condemned by Mr. NAUGHTON DUNN (Birmingham), who said that division of the anterior tibial tendon caused claw-foot and division of the posterior tibial tendon caused flat-foot.—Mr. E. P. BROCKMAN (London) considered astragalectomy to be a very bad operation and said that all cases so treated relapsed sooner or later. He recommended open division of the tight structures on the inner side of the foot.

Fractures of the Neck of the Femur

Mr. WATSON JONES said that after high fracture of the neck of the femur there was often radiographic evidence of impairment of blood-supply in the proximal fragment, and this accounted for the slow union of these fractures. Nevertheless the neck distal to the fracture had a normal blood-supply, and its decalcification and absorption was due to the traumatic hyperæmia of continued movement of the fragments on each other; it was not observed when the fracture was perfectly immobilised. The prolonged and complete immobilisation necessary could be secured by the Smith Peterson nail, but the operation was most difficult. The speaker had devised a canalised nail and guide to facilitate accurate central insertion by open operation. A similar principle had been independently used by West in Australia and Sven Johansen in Sweden, but these workers had developed a subcutaneous technique with Kirschner wire and radiographic control which was more difficult and less certain. The treatment was relatively safe even in very old people because no splints or plaster were used; no weight-bearing was permitted until the fracture was united. The operation was contra-indicated in old fractures with avascularity of the head of the femur. Non-union after arthrodesis of the osteo-arthritic hip was analogous to non-union after fracture of the neck of the femur and could be prevented in the same way by driving a Smith Peterson nail into the pelvis. With this addition to the technique of simple intra-articular arthrodesis consolidation was certain and rapid.

Prof. HEY GROVES (Bristol) had seen the Sven Johansen technique on the continent; two or three hours of tedious work had been involved and the speaker believed that the open operation which had been described would prove more satisfactory.—Mr. NAUGHTON DUNN said that the operation was one of great difficulty even in the hands of Smith Peterson himself, and the high percentage of successful results reported commended the method.—Mr. V. H. ELLIS (London) advocated earlier weight-bearing in a walking calliper splint, but the opener replied that the Thomas's splint or calliper was dangerous in such high fractures and was not to be recommended at any stage of treatment; the splint extended up to but not beyond the fracture and directly transmitted every movement of the limb to the level of injury.

The Lumbar Spine and Pregnancy

Mr. LAMBRINUDI reported clinical observations which disproved current obstetrical teaching that lumbar lordosis was normal in pregnancy. Normally there was extension of the lumbar spine and flattening of the sacrum, but this movement was only possible if the muscular tone was good and the sacro-iliac and lumbo-sacral joints were mobile. Failure in this mechanism with the development of an abnormal lumbar lordosis accounted for backache during and after pregnancy.

Mr. N. CAPENER (London) showed comparative series of radiographs of the lumbar spine with patients lying, standing, and stooping. The intervertebral foramina were enlarged in flexion of the spine and narrowed in hyperextension. The bearing of this observation on sciatic scoliosis was discussed.

Adolescent Coxa Vara

Mr. ELLIS reported nine cases of slipped upper femoral epiphysis and advocated gradual correction of the deformity by skeletal traction in a Thomas's splint. Forcible correction by manipulation under anæsthesia usually caused degeneration of the epiphysis and osteo-arthritis of the hip.

Mr. E. N. WARDLE (Liverpool) advocated traction in the neutral or even the adducted position by means of a Thomas's frame with the groin strap on the affected side.

Prof. J. C. G. Ledingham, F.R.S., director of the Lister Institute, will deliver the Herter lectures at the Johns Hopkins University, Baltimore, in the first week of December. His subject will be Studies on Virus Problems.

OBITUARY

JOSEPH STRICKLAND GOODALL, M.R.C.P.

WE regret to record the death of Dr. Strickland Goodall, the well-known cardiologist, which occurred on Nov. 23rd at his country house in Norfolk, after a long illness.

Joseph Strickland Goodall was born in 1874, the son of Joseph Goodall, senior surgeon in the Queensland Government Service, and Anne Strickland Blaydes, of Hedley, Yorkshire. For six generations his forefathers had been members of the medical profession, one of them, Charles Goodall, having been president of the Royal College of Physicians of London from 1709 to 1712. Goodall spent his boyhood in the country near Brisbane and on Thursday Island before coming to England to enter Harrow School. From school he proceeded as a medical student to the Middlesex Hospital, gaining the senior entrance scholarship at the hospital and being an exhibitioner in natural science. He graduated as M.B. London in 1900, held the usual house appointments at the Middlesex Hospital, and followed these up by post-graduate work in Edinburgh and Paris.

DR. STRICKLAND GOODALL

In 1910 Goodall obtained the diploma of F.R.C.S. Edin., and was elected F.R.S. Edin., by which time he had commenced a long association with Middlesex Hospital. As a member of the teaching staff, he was senior demonstrator of physiology in the school for seven years, and lectured on that subject and on pathological chemistry. He became sub-dean of the school, and was a most attractive teacher, his classes being, in particular, attended by many students from overseas. In the course of this work he developed his close interest in electrocardiography, and here he became a pioneer. He was appointed physician at the National Hospital for Diseases of the Heart, Westmoreland-street, W., in 1914, in which year he obtained the diploma of M.R.C.P. London, and here the same success attended his clinical demonstrations in the hospital which had marked his educational courses at Middlesex. Outside the hospital he was recognised as a teacher, for an association with the Society of Apothecaries, as a member of the Society, led him to be their examiner in physiology and biology, while at the City of London College, an institute of the City Polytechnic, he held for a period the position of teacher of biology and physiology. During the war he was selected by the War Office as a consulting cardiologist and was appointed to the Australian Auxiliary and Red Cross Hospitals in Regent's-park. He retired with the rank of major.

Dr. Goodall was one of the first consulting physicians in London to practise more or less exclusively as a cardiologist. He wrote no formal treatise, but he made many contributions to medical journals, his writings being largely concerned with the myocardium and the association of heart diseases with thyrotoxicosis. Here he was one of the first in this country to draw attention to the condition, and reference may be made to the important contribution to our columns upon the subject furnished by him in collaboration with Mr. Lambert Goodall (THE LANCET, March 5th, 1927). He wrote the section on cardiovascular diseases in the seventh, eighth, and ninth editions of Savill's Text-book of Medicine, delivered the St. Cyres Lecture at the Westmoreland-street Hospital, described in these columns certain cases of heart-block, and contributed to the *British Medical Journal* at the close of the war, in association with five others, a valuable investigation undertaken at the Westmoreland-street Hospital of 10,000 recruits with doubtful heart condition.

Mr. Lambert Rogers writes this personal tribute: "To his many friends the death of Dr. Strickland Goodall will mean a sense of profound loss, for his was an outstanding personality. His students loved him and looked on him as a tower of strength. His were the great attributes of self-reliance, power of initiative, courage in responsibility, and fertility of resource. The originality of his thoughts, the clarity of the language in which they were clothed, the dignity of his bearing, and the directness and simplicity of his manner made a deep impression. His presence left patients with more hopefulness, and he was an inspiration to his students. The study, the teaching, and the practice of medicine were an absorbing passion with Goodall, and those of us who knew him well will have a deep sense of gratitude for having known him."

Dr. C. E. Lakin writes: "I first made Strickland Goodall's acquaintance when he was demonstrator in physiology at the Middlesex Hospital. As students I think we were impressed most by his wonderful vivacity and enthusiasm. He was the most graphic of teachers and, what is more, his lessons struck home. He passed from one success to another, and through all never spared himself. His capacity for work was phenomenal. At a later time he was lecturing on biology and physiology at the City of London College, spending his days demonstrating in the same subjects at Middlesex, making various contributions to learned societies, and carrying on a practice in the evenings at Vanbrugh Park. It was commonly said that he was working sixteen hours a day and must have been one of the hardest worked men in a hard-working profession, and that is saying a great deal. Looking back this all seems but yesterday, and now all is over and we are left lamenting that the years of ease which seemed within his grasp have eluded him. His heroic resolution to carry on his work during the last two years in face of a dread disease was the culmination of the courage of his earlier days. The memory of his unbeaten will as well as of his kindliness and generosity will ever live with his many grateful pupils."

Dr. Goodall was freeman of the City of London, a member of the Royal Thames Yacht Club, a keen yachtsman and motorist. He is survived by a widow and one son.

JOHN SMITH, M.D. Edin.

THE death occurred on Nov. 16th of Dr. John Smith of Kirkcaldy. He received his medical education at the University of Edinburgh and Charing Cross Hospital. He graduated at Edinburgh in arts

with first-class honours, obtained the English double diploma and proceeded to M.D. Edin. in 1886. He was a prizeman of the Royal College of Surgeons of Edinburgh, held the house appointments in the Royal Infirmary, and also in the Edinburgh and Glasgow Maternity Hospital, while in London he was clinical assistant to the Royal Ophthalmic Hospital, Moorfields. In Kirkcaldy he held appointments as medical referee under the colonial emigration service and under the Workmen's Compensation Act. In his youth he was a remarkable footballer, and one of the small group who distinguished themselves in the same under both rules, being in 1876 reserve man in the Scottish Rugby international team, while under Association rules he represented Scotland ten times between 1877 and 1884. At the time of his death he was in his eightieth year, and the end was preceded by a long illness.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Slum Clearance and Overcrowding

LABOUR CRITICISM

IN the House of Commons on Nov. 22nd Mr. HICKS speaking on behalf of the Labour Opposition, upbraided the Government for its complacency about the plight of the industrial areas and slum clearance. He pictured the slums of Great Britain as he had seen them and as he knew they still existed.

He thought of the horrors in London, the far-spreading regions which were but one huge slum. He thought of areas in Manchester and other places in England and Scotland where there were miles of back-to-back houses. What justification was there for the statement that slums were disappearing? They existed in all their stinking filth and rottenness and it was the poorest people in the community who were compelled to dwell in them. There were millions of people to-day in Britain whose lot it was to live in tumble-down hovels with leaky roofs, patched brickwork and bad floors, and infested with rats and other vermin. These facts were reported daily by medical officers of health. Mothers were watching their children grow up pale and sickly in such surroundings. Menfolk were being robbed of all the decencies of home life. The only slum clearance that was being made was under the Greenwood Act, passed in 9130 during the late Labour Government. The figures showed that in 1931 400 houses were built under that Act; in 1932, 5146; in 1933, 6302, and in 1934, 15,058. That amounted roughly to 27,000 houses for slum clearance from 1931 to 1934. The present Government's campaign against the slums was marked from the outset by signs of failure; no sooner had any attack been begun on slumdom than the dark forces of the slum landlords had come up to claim compensation.

A much stronger and bolder policy than anything yet contemplated by the Government was called for to tackle the terrible problem. Not only, Mr. Hicks concluded, was the Government's slum clearance slow, but their housing policy was conducive to the creation of more slums in the future. Houses had been built in a rush and with all sorts of material, and these would inevitably produce problems as difficult to tackle as the slum problem of to-day.

THE GOVERNMENT REPLY

Sir HILTON YOUNG, Minister of Health, said the programme was to clear 280,000 houses, which were recognised slum houses ascertained by survey, and their abolition would mean the rehousing of 1,250,000 people. The period of preparation and organisation was just being completed, and the next period was the conversion of that preparation and organisation into action. The houses they had in sight as a result of the first single year in which they were beginning to earn the harvest from their labours was 34,000, three times as many as in preceding years. To clear 280,000 houses in five years they had to attain an average rate of at least 56,000 a year, and already they had reached practically the average rate. The rate already which would assure the success of the five-year plan, the concentration of effort on slum clearance in all the great cities, was going to gain momentum, he believed, until it reached its maximum about a year or 18 months hence. These houses were being built under the by-laws of local authorities as to materials and standards of accommodation which were in accordance with modern ideas and practice. In the half-year to September last private enterprise had added to the pool of houses in the country 134,000 houses, and in the course of last year it produced over 250,000. No one contended that these houses were a sufficient provision for some of the most anxious aspects of our housing problem, particularly that of the small house to let to lower paid wage earners, but they did make an important contribution towards the solution of that problem.

With regard to the forthcoming Bill to deal with the problem of overcrowding, Sir Hilton Young said that it was necessary that the attack on the slums should have reached a certain degree of conversion into action before they launched the attack on overcrowding. The evil of overcrowding from the point of view of public health and the welfare and happiness of the people was greater than the evil of the slums. Concerted action over the whole country at one time was necessary to deal with the evil. Slums and overcrowding were evils which could no longer be tolerated in this country, and whatever measures were necessary eventually to get rid of them would be adopted by the Government.

Depressed Areas Bill

In the House of Commons on Monday, Nov. 26th, Mr. OLIVER STANLEY, Minister of Labour, presented the Depressed Areas (Development and Improvement) Bill to provide for the initiation, organisation, prosecution, and assistance of measures designed to facilitate the economic development and social improvement of the depressed areas, for the appointment of commissioners for those purposes, and for purposes connected with the matters aforesaid.

The Bill was read a first time.

HOUSE OF COMMONS

THURSDAY, NOV. 22ND

Offences against Vaccination Acts

Mr. GROVES asked the Home Secretary the yearly number of persons proceeded against under the Vaccination Acts for the last ten years for which the records were available; how many orders to vaccinate were made each year; and how many persons were fined under either Section 29 or Section 31 of the Vaccination Act, 1867.—Sir JOHN GILMOUR replied: During the ten years from 1924 to 1933 the number of persons proceeded against in England and Wales for offences against the Vaccination Acts 1867 to 1907, the number of such persons fined and the number of orders directing vaccination under Section 31 of the Act of 1867 were as follows:—

Year.	Persons proceeded against.	Fined.	Orders to vaccinate.	Year.	Persons proceeded against.	Fined.	Orders to vaccinate.
1924	246	155	255	1929	129	100	82
1925	221	143	192	1930	119	85	73
1926	176	118	138	1931	73	52	65
1927	148	114	136	1932	87	65	76
1928	182	131	185	1933	118	100	43

District Auditors and Milk for School-children

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Board of Education whether, in view of the

uncertainty that would hang over local authorities in securing the sanction of the district auditor to extra payments for Grade A (T.T.) milk for school-children, he would take the necessary steps to remove that uncertainty.—Mr. RAMSBOTHAM replied: No Sir. This particular matter is one which in my noble friend's opinion must be left to the discretion of the district auditor.

Mr. DAVIES: Does not the hon. gentleman think it is grossly unfair to throw a matter of policy upon the district auditor for determination, and would it not be much better to let the local authority know definitely whether it can or cannot pay from its own coffers the difference in the price of milk for school-children?

Mr. RAMSBOTHAM: I am afraid the position of the district auditor is more or less quasi-judicial and that I cannot intervene in the matter.

Mr. PALING: Is not the Minister of Health doing his best to secure the highest grade of milk for these children, and is this very helpful towards that department?

Satellite Towns

Sir FRANCIS FREMANTLE asked the Minister of Health when he expected to receive the report of Lord Marley's Committee on Satellite Towns, as promised at the end of July last.—Sir HILTON YOUNG replied: I understand that the committee anticipate that they will be in a position to present their report at a very early date. I have no doubt (he added in reply to another question) it will be in time for consideration in connexion with the forthcoming Overcrowding Bill.

A Nurse's Death after Vaccination

Mr. GROVES asked the Minister of Health whether he was aware of the death of Winifred Annie Edwards, aged 20 years, a nurse at the Birmingham Hospital, who died at the Queen's Hospital, Birmingham, on Oct. 16th, from post-vaccinal encephalomyelitis; that Prof. Haswell Wilson, a pathologist at Birmingham University, stated the condition to be due to a reaction of the vaccine, and that the girl would probably not have died if she had not been vaccinated; what kind of lymph was used; whether he was aware that Miss Edwards was vaccinated in order to take up a position at a Sheffield institution; whether the Sheffield institution made vaccination a condition of employment; and whether there was any possibility of compensation being paid to Miss Edward's relatives.—Sir HILTON YOUNG replied: The answer to the first, second, third, fifth, and sixth parts of the question is in the affirmative. I understand that the lymph used in this case was supplied by "Dr. Renner's" establishment, which is licensed under the Therapeutic Substances Act for the manufacture of lymph. I am not aware of any enactment under which compensation could be paid in such a case.

Telephone Facilities for Panel Patients

Mr. LLEWELLYN-JONES asked the Minister of Health whether he was in a position to make a statement as to the steps being taken to ensure a satisfactory telephone service in remote rural areas so as to enable insured persons, in case of sudden or serious illness, to communicate with their panel doctors.—Sir HILTON YOUNG replied: Since 1924 a limited sum of money has been available from National Health Insurance Funds for the improvement of telephone facilities in connexion with the provision of medical benefit in remote rural areas. During the last three years a sum of £837 has been expended for this purpose in response to applications from insurance committees in England and Wales.

Unemployed Persons and Medical Benefit

Mr. LLEWELLYN-JONES asked the Minister of Health the approximate number of insured persons who had ceased to be entitled to medical benefit during the periods ended Dec. 31st, 1933, and June 30th, 1934, respectively, who would still have been entitled to this benefit had the Prolongation of Insurance Act been continued.—Sir HILTON YOUNG replied: The approximate number of persons who were notified by approved societies as ceasing to be entitled to medical benefit on Dec. 31st, 1933, by reason of prolonged unemployment and were not subsequently notified as having resumed employment was 89,000 in England and 17,000 in Wales. The figures include, however, a substantial number of persons (estimated at about 10 per cent.) who failed to prove that they had continued up to the end of 1933 to be available for and unable to obtain employment and who would consequently not have remained entitled to medical benefit if the Prolongation of Insurance Acts had not continued in force.

Serving Naval Ratings and Health Insurance

Mr. RHYS DAVIES asked the First Lord of the Admiralty the number of serving naval ratings who were members of health insurance approved societies and the number who were not; what was the possible membership of the suggested naval approved society for serving and ex-serving ratings and marines; how many branch offices were proposed; whether the head office was to be in London; and whether he could state the proposed salaries of the various officials.—Sir B. EYRES-MONSELL replied: On Dec. 31st, 1933, the latest date for which information is available, 36,000 out of a total of 82,500 serving ratings were not members of approved societies.. I am not yet in a position to supply the rest of the information asked for by the hon. Member.

Mr. RHYS DAVIES asked the First Lord of the Admiralty, what progress had been made with the proposal to form a national health insurance society within the trust of the Royal Naval Benevolent Trust since the annual meeting of 1933; under what part of the charter this scheme would be framed; whether it would be necessary to take any Parliamentary action; whether the lower deck was to be consulted and when; what officials of the Admiralty were present at the discussions with representatives of the trust at the Admiralty on Monday, Nov. 12th, 1934; and what transpired at that conference.—Sir B. EYRES-MONSELL replied: This subject was discussed at the Admiralty with representatives of the Royal Naval Benevolent Trust on Nov. 12th. The proceedings were informal, but the main object of the meeting was to give information to the proposers of the scheme as to some of the difficulties in its realisation. As these appear to be of a serious nature, the further matters of detail have not so far been considered. As a direct outcome of the meeting it is hoped that steps can be taken with a view to reducing the number of serving men who are not members of approved societies.

MONDAY, NOV. 26TH

Progress of Housing

Mr. MITCHESON asked the Minister of Health the total number of houses built in England and Wales during the six months ended Sept. 30th, 1934, and, for comparison, the figures for the corresponding period of 1933.—Mr. SHAKESPEARE, Parliamentary Secretary to the Ministry of Health, replied: The number of houses built in England and Wales in the six months ended Sept. 30th, 1934, was 156,463. The number built in the six months ended Sept. 30th, 1933, was 113,332.

TUESDAY, NOV. 27TH

Increase in Number of Suicides

Sir ARNOLD WILSON asked the Minister of Health whether his attention had been drawn to Table 25 of the Registrar General's Statistical Review showing that cases of suicide had increased from 3759 in 1921 to 5743 in 1932, with an increase of nearly 60 per cent. in age groups of 25 and under, and that cases of attempted suicide had increased since 1920 to 1924 from 41·8 per million to 82·1 per million in 1932; and whether he would instruct the chief medical officer of the Ministry to deal with the question in future reports on the state of the public health.—Mr. SHAKESPEARE replied: My right hon. friend's attention has been drawn to these figures. The question has been dealt with from time to time in past reports of the chief medical officer of the Ministry, and my right hon. friend can be assured that it will not be lost sight of in the future.

MEDICAL NEWS

University of Oxford

Prof. O. L. V. de Wesselow has been nominated examiner in medicine for two years from the beginning of Hilary term, 1935.

Rolleston Memorial Prize.—This prize, which is now of the value of about £100, is awarded every two years for original research in animal and vegetable morphology; physiology and pathology; or anthropology. The next award will be made in Trinity term, 1936, and further particulars may be had from the registrar of the University.

Radcliffe Travelling Fellowship.—An examination for this fellowship, which is of the annual value of £300, and is tenable for two years, will begin on Feb. 19th.

There will be papers in physiology, pathology, and preventive medicine, together with a practical examination in pathology; an essay subject will also be proposed. Candidates may, in addition, offer a special branch of medicine or surgery, but notice of this should be given when application is made. They must have passed the examinations required for the B.M. degree not more than four years previously, and they should send their names, addresses, and qualifications to the regius professor of medicine, University Museum, Oxford, not later than Feb. 14th. It is a condition of the fellowship that the holder shall spend at least 12 months outside the United Kingdom.

University of Cambridge

The Raymond Horton-Smith prize has been awarded to Mr. Hermon Taylor for a thesis on osteitis fibrosa. Dr. W. G. Oakley and Dr. H. B. Stallard received honourable mention.

University of London

The title of reader in industrial physiology in the University has been conferred on Dr. G. P. Crowden, lecturer in that subject at the London School of Hygiene and Tropical Medicine.

Dr. Crowden was born in 1894 and educated at Peterborough Grammar School and University College, London. During the war he saw active service in France, and attained the combatant rank of captain. In 1921 he graduated B.Sc. Lond., with first-class honours in physiology, and was awarded the university studentship in physiology. He qualified as M.R.C.S. in 1925, and took his M.Sc. degree a year later. From 1924 to 1929 he was a lecturer in the department of physiology at University College, where he also served as sub-dean in the faculty of medical sciences. Since 1925 he has been hon. secretary to the Research Defence Society and editor of the "Fight Against Disease." In 1928 he became secretary of the nutrition committee of the Medical Research Council and also chairman of the council of the British Association for Physical Training. He has been especially interested in problems of muscular work and in the application of physiology to hygiene and industry. The term "industry" he has interpreted widely as covering not only the conditions of occupation but the prevention of disability, especially in earlier life; hence his observations have embraced such diverse objects as the investigation of hearing in school-children, the improvement of the diet of the working-classes, and the maintenance of comfort in the tropics.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—L. Banszky, Middlesex Hosp.; J. E. Darlow, Guy's Hosp.; C. McK. Johnston and L. A. Lewis, King's Coll. Hosp.; B. S. Minden, St. George's Hosp.; J. F. L. Walley, Univ. of Cambridge and St. Mary's Hosp.; and G. Williams and W. C. Winterbottom, St. Mary's Hosp.

Medicine.—J. E. Darlow, Guy's Hosp.; D. S. G. Genge, St. Thomas's Hosp.; M. T. Hirst, King's Coll. Hosp; H. M. R. Waddell, Univ. of Manchester and Charing Cross Hosp.; G. Williams, St. Mary's Hosp.; and J. E. G. Wright, Westminster Hosp.

Forensic Medicine.—J. A. Amor, St. Mary's Hosp.; E. St. M. Brett, Middlesex Hosp.; J. E. Darlow, Guy's Hosp.; F. M. Kerry, Univ. of Durham; W. E. Whaite, Univ. of Manchester; G. Williams and W. C. Winterbottom, St. Mary's Hosp.

Midwifery.—C. J. Dandekar, Univ. of Durham; J. E. Darlow, Guy's Hosp.; F. A. Frank, Univ. of Liverpool; and H. G. Howitt, London Hosp.

The following candidates, having completed the final examination, have been granted the diploma of the society entitling them to practise medicine, surgery, and midwifery:—L. Banszky, J. E. Darlow, F. A. Frank, H. G. Howitt, C. McK. Johnston, F. M. Kerry, and L. A. Lewis.

The Master (Sir G. S. Buchanan), the senior warden (Sir W. H. Willcox), the junior warden (Dr. J. S. Fairbairn), and the court of assistants of the society held a reception on Friday, Nov. 23rd, at their hall in Water-lane, E.C., to meet members of the Society of Medical Officers of Health. A large number of medical officers from different parts of the country accepted the invitation, among others being Dr. R. Veitch Clark, president of the Society of Medical Officers of Health, and the officers of that society.

University of Liverpool

Dr. Julius Libman, medical registrar to the Royal Infirmary, Liverpool, has been appointed to the newly created post of research assistant to the professor of medicine at the University. The appointment is a full-time one and is made for a period of three years.

Royal Sanitary Institute

Dr. James Fenton will preside at a joint meeting of this institute with the south-eastern centre of the Sanitary Inspectors Association which will take place on Tuesday, Dec. 11th, at 6 P.M., at 90, Buckingham Palace-road, London, S.W. Mr. H. G. Clinch, chief sanitary inspector of West Ham, will open a discussion on the Moyne Report on Housing.

"Lectures Adapted to a Juvenile Auditory."

The 109th course of lectures arranged for young people by the Royal Institution will be given by Mr. W. L. Bragg, F.R.S., Longworthy professor of physics in the Victoria University of Manchester. He will speak on electricity, and the lectures will be delivered at 3 P.M., at the Royal Institution, 21, Albemarle-street, London, W., on Dec. 27th and 29th, and Jan. 1st, 3rd, 5th, and 8th.

The Rickman Godlee Dinner

A dinner was held at the Dorchester Hotel on Nov. 27th to commemorate the jubilee of the first operation for the removal of a tumour from the brain, performed by Sir John Rickman Godlee on Nov. 25th, 1884, at the Hospital for Epilepsy and Paralysis, now in Maida Vale. Lord Horder presided over a gathering of some 160 persons, including many distinguished neurologists and neurological surgeons. Tributes were paid to the memory of Sir John Rickman Godlee by Dr. Wilfred Harris, Sir James Crichton Browne, F.R.S., and Sir Charles Ballance. Dr. Harris outlined Godlee's career, from the time when having studied medicine at University College Hospital he went to Edinburgh to work under Lister, and returned, imbued with the new principles of surgery, to compete unsuccessfully for a staff appointment at U.C.H. He was elected to the staff of Charing Cross but was recalled to University College Hospital when the next vacancy arose, and eventually left his fortune to this hospital. As president of the Royal College of Surgeons of England in 1913 Rickman Godlee attended the opening meeting of the American College of Surgeons, and was made an honorary fellow. Among many telegrams received wishing success to the memorial gathering was one from Dr. Harvey Cushing. The operation they were commemorating was the direct outcome of researches published by David Ferrier in 1873; the study of these led Dr. Hughes Bennett to interpret the symptoms shown by the patient as due to a tumour of the brain situated in the fissure of Rolando, and to suggest that Rickman Godlee might attempt to remove it surgically. Hughlings Jackson, David Ferrier, and Victor Horsley were present at the operation, of which the news soon became widespread. An anonymous letter to the *Times* on Dec. 16th, 1884, signed F.R.S., pointing out the importance of the advance achieved, was followed by a very large correspondence in which anti-vivisectionists took an active part. Dr. Harris had recently discovered the author of this letter to be Sir James Crichton Browne. The enterprise had proved that the brain was no pulpy indeterminate mass but an organ of localised function. From this beginning cranial surgery had progressed to a point which had enabled an American surgeon, W. E. Dandy, to remove the whole of one cerebral hemisphere, no recognisable change in the mentality of the patient having ensued.

Sir James Crichton Browne who received a stirring ovation said that he was the sole survivor of some notable

neurological events with which Godlee was associated. For example, he was the sole survivor of the first editors of *Brain*, and of the founders of the Neurological Society, as well as of those who saw the historic patient before and after the epochal operation under discussion. The experiments performed by Ferrier at Wakefield might be said to have inaugurated a new and scientific phrenology. That eminent surgeon and sound philosopher, Mr. Wilfred Trotter, had in the afternoon elaborated the details and message of the achievement (see p. 1207). Determined that it should receive due publicity Sir James had written a letter to the *Times* which had ignited a controversy which had raged for three months. He trusted that Dandy's recent success would not give the impression that the brain was a rudimentary or superfluous organ that ought to be removed systematically in childhood. Sir Charles Ballance spoke of Rickman Godlee's fine character and wide learning. He reviewed the main events in the history of brain surgery and the list of great men who had contributed to its progress.

The Chairman, speaking as a representative of clinical medicine, said that the thrill with which this advance must be recalled reminded us that in this country neurology had always had a status and prestige second to none elsewhere. At the Hospital for Epilepsy and Paralysis in Maida Vale there was a team of workers whose efforts were admirable. The race between medical neurologists whose activities were concentrated on securing more exact diagnosis and the surgeons who devised advances in technique enabling the knowledge to be applied as soon as it was acquired was an exciting one.

Dr. Anthony Feiling and Mr. H. W. Burleigh, secretary to the hospital, spoke eloquently of its present needs. Prof. Langdon Brown as an old colleague of the chairman praised his clinical subtlety, his unfailing kindness to his colleagues in the profession, and his keen and active interest, too rare among medical men, in the social questions of the day.

Imperial Cancer Research Fund

At a meeting of the general committee held on Nov. 22nd, the Duke of Bedford presiding, the thirty-second annual report of the fund, to which we referred last week, was adopted. Sir Humphry Rolleston, chairman of the executive committee, announced that Dr. J. A. Murray, F.R.S., who had been director of the fund since 1915, would retire in November next.

Dr. Murray's connexion with the fund, he said, dated from 1903. Together with Dr. E. F. Bashford he laid the foundation for the experimental investigation of cancer by proving that cancer is a disease to which all vertebrate animals are subject, and that it presents the same essential features in all the different species. The material collected in those early years on the natural incidence of cancer in mice had enabled Dr. Murray to demonstrate the hereditary factor in the incidence of the disease. His study of the early stages of the process of transplantation established the important fact that the experimental transmission of the disease represented actually a transplantation of living cells. Peyton Rous's subsequent discovery of tumours of the fowl which could be transmitted without the intervention of living cells, had led to numerous reinvestigations of Dr. Murray's early work, which had served only to confirm it. Of equal importance were his investigations on the phenomenon of immunity. Furthermore, he was the first observer in this country to verify the claims made by Prof. Yamagiwa and his colleagues that cancer of the skin could be produced experimentally by the repeated and prolonged application of tar. His extensive knowledge of the biology and morphology of the cancer cell had been of the greatest value in enabling him to criticise the numerous spurious claims which had been made concerning the cause or the cures of the disease. He had always placed not only material, but also his knowledge and shrewd judgment at the disposal of his medical and scientific colleagues.

Dr. Murray had maintained the tradition of the fund for sound, patient and careful work which had given it a leading place among the numerous institutions devoted to the study of cancer throughout the world.

Prof. E. H. Kettle was elected a member of the general and executive committees.

Society of Medical Officers of Health : Annual Dinner

Sir Hilton Young, in proposing the health of the Society at the May Fair Hotel on Nov. 22nd, spoke of the friendly face of the M.O.H. as a help and encouragement to him on his travels over the country as Minister of Health. He was conscious of a steady improvement in the relations between the centre of his spider's web at Whitehall and the medical officers at the periphery who understood his difficulties, the position being rendered easier by the Act of 1929, which gave more initiative to local authorities and defined more closely the function of the central government. He alluded briefly to two topics of immediate urgency. Maternal mortality, he said, had been forced on his attention by irrefragable statistics. We know, he added, where the remedy lies—namely, in increased care and attention given before, during and after childbirth. The remedy was not capable of indefinite postponement; the standard in backward areas must be brought up to that of the country as a whole. He now foresaw in five years an end to the intolerable evils of the slums. You have to put up the game, he said to the medical officers, where it can be shot. He was astonished at the success of the first year: more than 15,000 houses had been built to rehouse slum population; 19,000 were building; 34,000 in all against a previous yearly average of 11,000. The rate of building was still increasing and the maximum would not be reached until next year. When in five years' time the slums had been cleared he would be calling on M.O.H.'s for fresh duties. In the coming Bill would be laid down a standard of overcrowding, its extent to be accurately defined by the survey now being made. He knew he would not call on the medical service in vain. Dr. R. Veitch Clark, in replying, said he could recall no Minister of Health who took such a vivid interest in the work of his department or who had so familiarised himself by field work with the actual facts. Maternal mortality could, he felt sure, be enormously reduced by effective application of means already to hand, but we knew nothing at present to counteract the intoxications of pregnancy. Our weapons must be welded into one and there must be an organised maternity service. Rehousing was the complement of all the public health activities of the last 50 years; people must be put back into conditions in which they can live healthily. We were, he believed, living in the greatest age public health had ever seen; environment had been brought up to a reasonable level, the hospital system was being reorganised, but we were still only on the threshold of the development of the social conscience for individual and communal welfare. He envied every man and woman under 35 in the health service.

Two ex-presidents of the Society were surprised to find themselves present as guests. Sir John Robertson, in proposing the health of Dr. T. W. Naylor Barlow and Dr. G. F. Buchan, paid tribute to their services in raising the status and the remuneration of the service. Dr. Barlow, in replying, gave a vivid picture of the early difficulties and how they had been got over, with examples of how the security attained was reflected in the work done by the service. Dr. Buchan spoke of the Society's satisfactory financial position and hoped that funds might be allotted to research, for which, he said, there were just as many opportunities to-day as there were in the time of Harvey, Hunter, or Lister. Dr. T. N. V. Potts proposed "The Guests," to which Dr. J. S. Fairbairn responded. In his dual capacity he had, he said, seen a good deal of the medical officer of health. As chairman of the Central Midwives Board he had often had to tell him that while he knew a great deal about preventive medicine he had much to learn about preventive obstetrics. As president of the British College of Obstetricians he had found himself on occasion setting right some of his colleagues who regarded him as the embodiment of a local bureaucracy. Sir Gerald Hurst, M.P., who also replied, spoke of Dr. Veitch Clark's fine record of work in Manchester.

Royal Air Force Medical Dinner

The twelfth annual dinner of the R.A.F. medical and dental branches will be held at the R.A.F. Club at 7.30 for 8 P.M. on Friday, Dec. 7th. Information from Squadron-Leader R. Boog-Watson, Directorate of Medical Services, Air Ministry, 5-6, Clement's-inn, W.C.2.

Sutton and Cheam Hospital

A pathological laboratory has been opened at this hospital by Sir Maurice Cassidy. The cost of the building and equipment has been met by a grant from the executors of the late Mr. J. T. James.

Exhibition of Royal Portraits

An exhibition of royal portraits by Mr. P. A. de Laszlo was opened on Monday last at the gallery of Messrs. Knoedler & Co., Inc., 15, Old Bond-street. The exhibition, admission to which is 2*s.* 6*d.*, will remain open until Dec. 8th, and the portraits include those of the Duke of Kent and of Princess Marina. At the request of the Duke of Kent the proceeds of the exhibition will be devoted to the funds of St. George's Hospital.

Tropical Hygiene

The British Red Cross Society will hold a course of seven lectures and demonstrations on Tropical Hygiene on Mondays, Wednesdays, and Fridays, commencing on Friday, Jan. 4th, at their house, 9, Chesham-street, Belgrave-square, London, S.W., at 5.30 P.M. The course will cover such questions as food, clothing, and medical and sanitary precautions necessary for health in hot countries, and is open to non-members of the society. Further information may be had from the county director.

Central Association for Mental Welfare

During last week's conference a luncheon was held at the Hotel Russell, on Nov. 22nd, Sir Leslie Scott presiding, to celebrate the twenty-first anniversary of the association. Sir Hilton Young, who was chief guest, spoke appreciatively of voluntary local bodies which brought into official work the atmosphere of human understanding and educated public opinion. He suggested that the association should consider the difficult question of sterilisation of the unfit. Raw material for the education of public opinion had been provided by the firm, scientific basis of the Departmental Committee's report, but the coöperation of such bodies as the C.A.M.W. was needed before the Government could act. The rate of increase of institutional provision continued to mount; the work was supported by a constant and firm public opinion of its necessity. The real task however was to explore causes and prevent as well as cure.

Royal Free Hospital Post-Graduate Course

A week-end post-graduate course for former students of the London School of Medicine for Women will be held at the Royal Free Hospital from Dec. 7th to 9th. On Friday the lecturers will be Dr. C. B. Heald (the minor injuries of work and sport), Miss Gertrude Dearnley, Dr. L. S. T. Burrell (treatment of pulmonary cavities), Mr. C. A. Joll (diseases of gall-bladder and bile-ducts), and Dr. C. W. Morris (some aspects of modern anæsthesia with reference to premedication). On Saturday the lecturers will be Dr. H. D. Haldin-Davis (treatment of some common dermatoses), Prof. Amy Fleming (antenatal methods), Miss E. C. Lewis (diseases of the breast), and Miss Ida Mann (recent advances in ophthalmology). On Sunday morning there will be three lecture-demonstrations by Dr. Una Ledingham (the regulation of weight by diet), Dr. Neill Hobhouse (nervous disorders), and Dr. D. T Davies (dyspepsia).

British Medical Association: Middlemore Prize, 1936

The Middlemore prize, which consists of a cheque for £50 and an illuminated certificate, was founded in 1880 by the late Richard Middlemore, F.R.C.S., of Birmingham, to be awarded for the best essay or work on any subject which the Council of the British Medical Association may from time to time select in any department of ophthalmic medicine or surgery. The Council of the Association will consider an award of the prize in the year 1936 to the author of the best essay on "The Ætiology, Prophylaxis, and Treatment of Myopia, especially in its Higher Degrees." Essays in competition must reach the Medical Secretary, B.M.A., at the Association House, Tavistock-square, London, W.C.1, on or before Dec. 31st, 1935. Each essay must be signed with a motto and accompanied by a sealed envelope marked on the outside with the motto and containing the name and address of the author.

Practical Contraceptive Technique

On Thursday, Dec. 6th, at 2.30 P.M., a demonstration of the technique of application of a variety of contraceptive methods will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher, at the Clinic for Constructive Birth control, 108, Whitfield-street, London, W. Application for tickets (which will be supplied to medical practitioners and senior students only) should be made in writing to the hon. secretary at that address.

British Health Resorts Association

The annual general meeting of this Association was held at the Institute of Hygiene on Nov. 22nd. Lieut.-Colonel R. H. Elliot, chairman of the medical advisory committee, who presided, said that the association was now paying its way and no longer disheartened by a heavy load of debt, but it was still handicapped by lack of means. He thought that if the movement failed now it would fail for at least a generation. Lord Meston, the president, seconded Colonel Elliot's motion for adoption of the report, and the other speakers included Dr. C. W. Buckley, Dr. Matthew Ray, and Dr. Alfred Cox, the general secretary. Delegates from Harrogate, Bournemouth, Clacton, Ventnor, and other centres paid tribute to the benefit their resorts had derived from the association's work.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. R. W. Mussen to *President* for R.N. College, Greenwich, for course.

Surg. Comdr. C. N. Ratcliffe to *Orion* as Squadron M.O. on transfer of flag.

Surg. Lt.-Comdrs. A. R. Ewart to *Leander*, and W. A. Hopkins to *Pembroke* for R.N.B.

Surg. Lts. V. J. Fielding and A. E. Flannery transferred to permanent list.

W. J. Wolton entered as Act. Surg. Lt. (D.) and apptd. to *Victory* for Haslar Hospital.

ROYAL NAVAL VOLUNTEER RESERVE

A. V. Griffiths entered as Proby. Surg. Lt. and attached to List 1 of the Mersey Division (h.q.); and R. V. Jones entered as Proby. Surg. Sub.-Lt. and attached to List 2 of the Severn Division.

ROYAL ARMY MEDICAL CORPS

Lt. J. Walsh to be Capt.

Short Serv. Commn.—Lt. (on prob.) C. G. O'Driscoll is restd. to the estabt.

ROYAL AIR FORCE

Flight Lt. O. M. Fraser to R.A.F. Depôt, Uxbridge.

Dental Branch.—Flight Lt. Roy Scoggins is granted a permanent commission in this rank.

INDIAN MEDICAL DEPARTMENT

Capt. (Sen. Asst. Surg.) P. W. R. Browne to be Maj. (Sen. Asst. Surg.).

DEATHS IN THE SERVICES

The death occurred on Nov. 20th at Churt, Surrey, of Surg. Rear-Admiral ALEXANDER GASCOIGNE WILDEY, C.B. He was the son of the late Surg. William Wallace Wildey, R.N. Born at Cosham, Hants, in 1860, he was educated at Felsted School and at Guy's Hospital. Qualifying M.R.C.S. Eng. and L.S.A. Lond. in 1882, he entered the Royal Navy as surgeon in 1884, became staff surgeon in 1896, deputy surgeon-general in 1912, and surgeon rear-admiral in September, 1918, and retired in May, 1920. He took part in the European War and received American, French, and Italian decorations. He had served at the naval hospitals of Chatham and Plymouth as senior operating surgeon, was in charge of the Royal Naval Hospital, Gibraltar, 1916–18, and of Haslar Hospital 1918–20, and was sometime a naval member of the Medical Consultative Board. He was created C.B. in 1919. He was editor of the surgical section of the Official Naval Medical History of the War. He married in 1889, Ruth Amy, daughter of the late Paymaster-in-Chief, William Horniman, R.N.

NOTES, COMMENTS, AND ABSTRACTS

ABDOMINAL SURFACE MARKINGS

THEIR FALLACIES AND DANGERS*

BY A. E. BARCLAY, O.B.E., M.D., D.M.R.E.

LECTURER IN MEDICAL RADIOLOGY AND ELECTROLOGY TO THE UNIVERSITY OF CAMBRIDGE

IN the early days of radiography of the alimentary tract the problem seemed to be: how can we make what is observed by means of X rays fit in with accepted anatomical facts? To-day, the mental attitude is reversed and all must accept the fact that the fluid anatomy of the living is far different from that of the dead.†

Avoiding all detail, I propose here to point out some of the fallacies inherent in the traditional descriptions. They are of great practical importance, and in my view have been responsible for some serious mistakes in medical and surgical practice.

The Mobility of Viscera

The average position of the diaphragm, in the mid-phase of respiration, is about the level of the upper border of the 11th dorsal vertebra, and corresponds approximately with the level of the xiphisternal junction. In health this level is fairly constant, but it may be altered by various conditions not necessarily pathological. In the dead subject the level of the dome of the diaphragm is about the 8th–9th dorsal vertebræ (Fig. 1). In the surface markings of the abdomen, therefore, there is a fundamental discrepancy of two inches or more. As all the viscera move upward with the diaphragm, it will be realised that the abdominal surface markings of the dead subject are entirely unreliable as a guide to the position of the organs in the living subject.

Various types of the normal stomach have been described—J-shaped, cow's horn-shaped, &c. The average J-shaped stomach extended to the level of the umbilicus, the junction of the 4th and 5th lumbar vertebra. Some, in the upright posture, only reached the level of the 3rd L.V.: these were regarded as hypertonic. Others extended far lower, even to the symphysis pubis. Some of these were definitely atonic: others however showed good tone and were not recognised as variations of the normal until comparatively recently, although they were often found in subjects who did not suffer from gastric symptoms. They were, unfortunately, regarded as pathological, labelled as gastroptosis and treated on this assumption. In addition to these variations, it was noted that there was a marked difference in the shape between that seen in the upright and in the horizontal positions. In the latter, the shape often approximated to that described in the anatomical text-books.

The tonic action of the stomach was another factor responsible for big alterations in the shape of the normal stomach. An average J-shaped stomach might suddenly lose its tone, quite apart from any pathological condition, because the patient was startled or afraid, with the result that the lower border might drop several inches. Spasm also, either localised or general, might lead to gross changes in anatomical form that might be transitory or might persist.

The variations found in the large intestine were very wide and the position of the flexures was far from constant. Moreover these parts had a latitude of movement that was surprising.

The degree of mobility that is possible in the viscera has been much studied. Posture and respiration produce changes in the disposition of the organs that must come as a shock to those who still hold the old conception of fixed form, shape, and position. In Fig. 2 is shown the range of movement of the pylorus in a healthy subject, and in Fig. 3 are shown two composite tracings from radiographs that should be convincing. Moreover the set inter-relationships of the viscera that are still current are equally valueless and dangerous. Although in the cadaver there is a relatively constant picture, in life the viscera have no fixed relationships one to another.

Surgery led Astray by Anatomy

It has been said that the greatest tragedy in science is the slaying of a beautiful theory by an ugly fact. In this respect, I fear that as regards the traditional descriptive abdominal anatomy, the X ray study of the viscera is one of these tragedies. Moreover, it is not a theoretical but a very real tragedy of life and death, and the whole tale is not yet told.

May I put the facts as I see them? Up to the days of Lister, the whole of the known anatomy of the abdomen was that of the dead body, and it was assumed that when the abdomen was opened the viscera would be exposed according to the text-book pictures. The pre-Listerian surface markings are still current in most text-books and in some of the schools of anatomy. Yet what do we see in the operating theatre? An incision is made, the bleeding is stopped, the peritoneum is opened. Then with calculated thoroughness the surgeon examines the presenting viscera. He knows that he can take nothing for granted, and not till he has sorted things out does he think of proceeding with his operation. The last thing he is justified in taking for granted is that he will find the viscera arranged according to the surface markings. I often wonder if, as he operates, visions ever rise up before him of the surface anatomy that he was taught and which, perhaps, he still teaches in another sphere than the operating theatre! The anatomy that he exposes is as foreign to the descriptive anatomy of the dissecting-room as are Chinese from the set rectitude of Roman characters. Probably the two types of anatomy that he knows are relegated to separate compartments of his brain that are not directly related to each other. But the inexperienced surgeon has not this knowledge: he has to learn the anatomy that he will use in his surgical work in the school of experience, for what he has learned in the dissecting-room is very largely useless and very definitely misguiding. Doubtless many mistakes have been made by inexperienced surgeons who had not yet realised the facts, and some of the cases one saw in the war period bore painful testimony to this.

Some 30 or 40 years ago there was a school of thought, voiced by Glénard and many others, which attributed symptoms to looseness and displacements of viscera. Visceroptosis had become a fashionable complaint, gastroptosis was a very definite condition, and later on loose kidneys and the mobile proximal colon came into the limelight as sources of symptoms. The teaching of the physicians, based on their recollections of dissecting-room anatomy, were very definite. They palpated and percussed out the air that happened to be in the stomach and, naturally, had no idea of the fallacies on which they were relying. They could be as dogmatic as they liked, for nobody could gainsay them. And they were—the patient had certain symptoms and these were due to ptosis. Then it became possible to open the abdomen with relative safety. The only anatomy that the surgeon knew was that of the dissecting and post-mortem rooms. He had no experience of what was and what was not normal in the *living* abdomen, and he looked to see whether the viscera occupied the positions described in the text-books. If the patient had symptoms that seemed to originate from some organ and he found it mobile, well, the symptoms must be due to the mobility, and he felt it his duty

* A paper read before the Anatomical Society of Great Britain, July, 1934.

† Some of these differences are described in detail in a book, The Alimentary Tract (Cambridge University Press, 1934), from which the accompanying illustrations are reproduced. See also THE LANCET, 1934, i., 11.

to fix that organ. He found a long stomach—that must be gastroptosis, and he hitched it up or even excised a portion, but he did not do this often because the results were so disastrous. He tried all sorts of devices to fix the viscera into a pattern such as he had been taught to consider the one and only normal. Then symptoms were fastened on to the kidneys that were loose, the proximal colon that was mobile, and the cæcum that was sloppy. They surely needed a lot of attention, and I recollect the various ligatures that were tried—silk, silkworm gut, catgut, kangaroo tendon, metal wire—but none of them was effective. There was only one thing that seemed really to fix things—i.e., Nature herself. If sufficient local damage was done to produce adhesions, then fixation resulted.

But the results! What a tale of tragedy it all was: surgeons persistently attempting year after year to make the viscera conform to the pattern of the dead and not realising that what they were attempting was diametrically opposed to the conditions that Nature calls for and demands all the time—absolute freedom of movement and an entire absence of fixed points. Surgeons were slow to realise that in these operations the one thing they had to fear was the production of adhesions, fixed points. It was not till the experience had been bought at an awful price of human suffering that they realised that it was futile to try to make the living anatomy conform to the dead pattern. When they succeeded in so doing, the clinical result was only too often a failure, the last state being infinitely worse than the first.

The vogue for this type of operation has not even yet completely died out, and from time to time one still comes across these human wrecks, men and women who will carry to the grave the fruits of this sad conception in surgery. The surgeons were perfectly logical in what they did, but they little

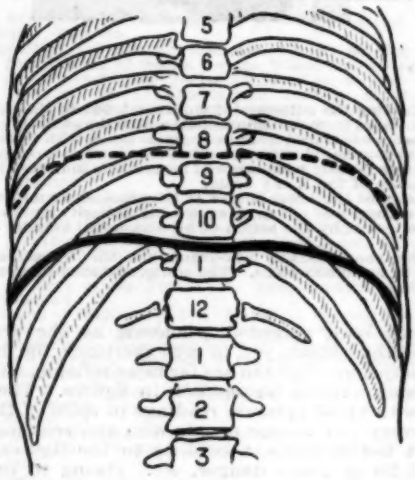

FIG. 1.—Tracing from a normal subject showing the usual level of the dome of the diaphragm in the mid-stage of respiration. The dotted line shows the position as given in most of the older anatomical text-books. Some give the level as high as the 7th D.V.!

realised that the foundations of the anatomy on which they relied were those of the dead and not of the living.

Misleading Physiological Theories

Physiology was to blame for another equally tragic and almost as widespread but shorter-lived phase of surgery. I refer to the colectomy and short-circuiting operations. The text-books suggested that the cæcum and colon were merely cesspools, relics of antiquity, for "the absorption is practically complete by the time that the food has arrived at the lower end of the ileum." If these organs were of this type, surely toxic absorption must occur and, naturally, a search was made for possible effects. Almost anything might be due to this cause: amongst many other supposed effects of this hypothetical toxic absorption, one remembers trying to make out what was meant by the "precancerous" condition that could be detected in the breasts. The argument was carried to extremes, logical but misguided

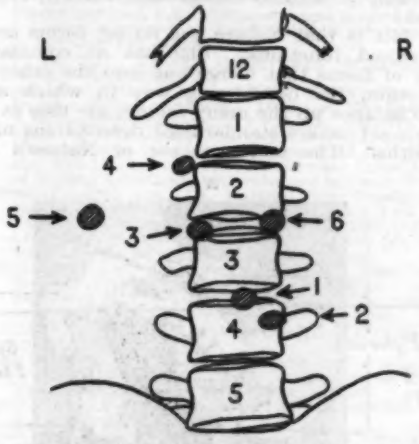

FIG. 2.—Healthy woman, aged 27. The position of the pylorus in a healthy subject plotted in from radiographs taken under various extremes of respiration and variations in posture. (1) Standing at rest; (2) standing, full inspiration; (3) standing, full expiration; (4) Lying on the back; (5) lying on the left side; (6) lying on the right side.

extremes, and the colon was short-circuited, or, with extraordinary technical skill, removed.

The story of this ghastly phase of surgery with its appalling mortality and the wreckage of so many of those who survived is still fresh in the memory. It does not concern my present argument except in that it emphasises the lesson that it would have been better not to teach anything as to the physiology of the colon, to admit ignorance in fact, rather than to mislead those who were responsible for the clinical application. We still know very little about the physiology of the colon. There is nothing so dangerous in medicine as a half-truth that is capable of neither proof nor disproof. It was on physiological half-truths that the surgeon designed the fixation and colectomy operations.

Doctrine versus Fact

In other spheres as in the case of the abdominal surface markings, it is quite clear that accepted teaching is contrary to facts revealed by new methods of observation. Maybe no satisfactory explanation is available for teaching, and we are met with the question: "But even if this teaching is not correct, what is the explanation? What must I teach?" Some of those who ask this question go away with the full intention of knowingly still propagating the fallacious teaching simply because they have not grasped the fact that it is only fair to teach nothing at all, or even to acknowledge complete ignorance, rather than to teach students something which is unproven or even definitely wrong.

Perhaps their attitude is only human, especially as the examiners may not share these views and will blame the teacher for the apparent ignorance of the candidates. One can only assume that this is so by the fact that the old abdominal surface markings have survived a quarter of a century of known fallacy. To accept them is the line of least resistance, for it is easy to teach the descriptive anatomy of the dead abdomen but extraordinarily difficult to give students an adequate idea of the fluid anatomy of the living subject. And as for examinations—how can an examiner find out whether a student does or does not know his subject when almost any answer

may be correct? To take an extreme instance: a perfectly normal healthy medical student happens to have a long stomach that extends almost into the pelvis, and that student, on being questioned, answers quite correctly that his own stomach is perfectly normal (just as his long nose is perfectly normal), and that in the standing position it is in relationship with the cæcum, bladder, and perhaps the sigmoid!

The fact is that Nature has no set forms and no standardised functions. She has at command a variety of forms that merge one into the other and, in function, the bewildering way in which she is able to balance up the many factors she uses even in a simple act makes standardised descriptions merely half-truths. The more we see of Nature's ways to scientific terms, and we do ill service to our students if we teach them to think of such problems as capable of being expressed in the terms of science. It gives them a wrong outlook on the problems with which they will deal in clinical medicine; they think of their formulæ and laboratory tests instead of studying the patient. This outlook naturally persists, and we note the ready and unquestioning acceptance that is given to any new test or procedure that can be expressed in mathematical terms of some sort.

Clinical observation is at once at a discount if it comes up against laboratory tests that can be expressed in definite terms. It is only slowly that the experienced physician learns to trust his own clinical judgment rather than to rely implicity on the evidence of such tests. For example, the basic metabolic

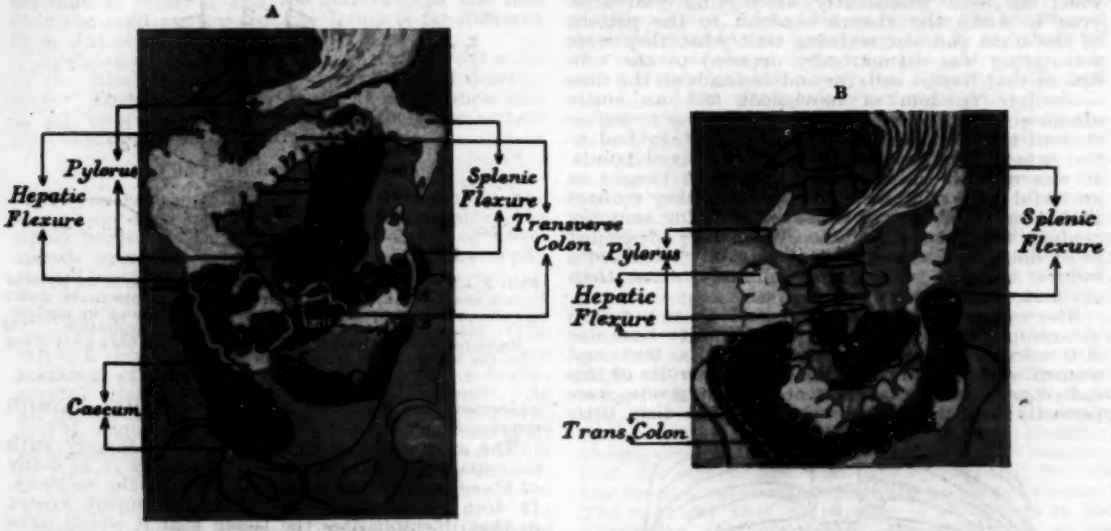

FIG. 3.—Composite tracings from radiograms of two healthy subjects, showing the extremes of movement due to the combined effects of posture and respiration. The dark shadows of the viscera are traced from radiograms taken with the subjects standing and in the extreme phase of *inspiration*. The light shadows of the viscera are traced from radiograms taken with the subjects lying supine and in the extreme phase of *expiration*. Moreover, the abdominal muscles are retracted, causing a considerable movement in addition to that obtained by respiration alone. The extraordinarily wide range of movements indicated is somewhat exaggerated by the radiographic technique owing to the divergence of the X ray beam.

A.—From a medical student of rather tall, slim build. The excursion of the lower border of the stomach as measured on the abdominal wall was recorded as 9 in. In the radiograms, however, there was not quite such a big disparity as the subject could not hold the stomach in the position into which he was able to jerk it by the action of his abdominal muscles (he was watching the effect of his movements with a looking-glass).

B.—A woman of 27. Note that although the flexures of the colon show marked movement, yet the transverse colon hardly moves at all. Obviously it is anchored down into the pelvis by some adhesions. The transverse mesocolon must be unusually long to allow of such free upward movement of the stomach.

the more dangerous and misleading the half-truths of the descriptive teaching of these subjects seems to be. The student gets an impression of definite form and function that is foreign to the ways of life.

Danger of Descriptive Terms and Formulæ

The anatomy of the abdominal viscera cannot be satisfactorily taught in the traditional descriptive terms and formulæ, that are so useful for class and examination purposes, any more than a picture can be described in terms of the chemistry and distribution of its constituent pigments. My views on this subject are strong, for it is my firm conviction that the blame for some of the failures of medicine lies very largely, if not entirely, with those who, for purposes of teaching, have in bygone days attempted to reduce to descriptive terms and formulæ things which are fundamentally elastic and not capable of being so expressed. Medicine is and always will be an art, "the art of coming to a conclusion on insufficient evidence," simply because the fundamentals, the anatomy, and physiology, are essentially elastic and cannot be standardised to fit into any formula. The instances I have mentioned, the various fixation and colon operations, are glaring examples of the fallacy of attempting to reduce the problems of life

rate has been accepted wholesale as the criterion of hyperthyroidism, yet, in my experience, the findings of a competent clinician are far more reliable, although he cannot express his opinion in figures. The same applies to blood-pressure readings in spite of the fact that every day we see people who are, seemingly, in perfect health when, according to the figures, they should be in grave danger, &c. Owing to our upbringing we trust science too implicitly, and do not recognise that our science is very imperfect and incomplete. The convincingness of figures makes us distrust the intangible clinical instinct that, with experience, is the one and only reliable guide we yet have in the "art" of medicine. Let me not be misunderstood: these scientific laboratory tests are of value, but they should not take the place of clinical observation to which they are valuable, but not necessarily infallible, accessories when applied to the individual.

How and What should Students be Taught?

But, clearly, students must be taught something, and I confess that I do not see the solution, for they must have pegs on which to hang their knowledge. How are students to be given an understanding of the fluid character of the living anatomy? The only

solution I can see, and it is a makeshift, is by increasing X ray demonstrations and X ray cinematograph lectures to such a point that the student can endow the pictures he sees in the dissecting-room with the attributes of life. This has been attempted in some schools. In Cambridge, for instance, extensive X ray demonstrations have been included in the anatomy course for the last six years. Incidentally, those who demonstrate in the X ray room must be as familiar with the radiographic appearances as they are with the shrivelled, toneless caricatures of the living which they demonstrate in the dissecting-room. It is, however, a great mistake to send an untrained demonstrator of anatomy into the X ray department and expect him to demonstrate the living subject. For this there are several very good reasons: (1) He must know the risks of X ray work and understand how they can be avoided. (2) He must be trained in the methods. (3) He must have experience, the longer the better, in the wide variations that are compatible with a normal subject.

The lot of an examiner dealing with these problems is indeed hard, for he cannot look for the cut-and-dried answers to questions that have been current through the centuries. How is he to determine the standard of knowledge a student has attained if almost any answer to a question may be correct as to the form, position, and relationships of the viscera? After all, however, it is more important that the student should realise the truth than that the ways of the teacher and examiner should be smooth.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Dec. 4th.

Pathology. 8 P.M. for 8.30 P.M. A. F. Hayden: The Inactivation of Serum for the Wassermann Reaction. J. McIntosh: The Source of Infection in Toy Pistol Tetanus. A. C. Crooke and Dorothy S. Russell: The Pituitary Gland in Addison's Disease. J. C. Hawksley: Auer's Bodies and their Occurrence in Monocytic Leukæmia. Demonstrations. W. G. Barnard and A. B. Bratton: 1. Massive Gliosis of Sciatic Nerve. 2. Hodgkin's Lymphogranuloma of the Small Intestine.

Orthopædics. 5.30 P.M. (Cases at 4.30 P.M.) Mr. Laming Evans: 1. Osteitis of Radius. 2. Photographs of a Case of Amniotic Bands. Mr. D. McCrae Aitken: 3. Osteochondritis of Spine after Treatment. 4. Delayed Union of Tibia and Fibula. Mr. S. A. S. Malkin: 5. Radiographs of Osteotomy for Ununited Fracture of Neck of the Femur. 6. Osteochondritis of Spine.

WEDNESDAY.

History of Medicine. 5 P.M. Mr. W. G. Spencer: Podagra and Gout. Prof. Tom Hare: Some Contributions to Mediæval Veterinary Science in the Kitab al-Falahah and in Fleta. Members of the section of Comparative Medicine specially invited.

Surgery. 8.30 P.M. Pathological Meeting. Cases and specimens.

THURSDAY.

Tropical Diseases and Parasitology. 8.15 P.M. Prof. J. Gordon Thomson: Incidence of Malaria in Nyasaland.

FRIDAY.

Otology. 10.30 A.M. (Cases at 9.30 A.M.) Discussion on Meningitis of Otitic Origin. Mr. T. B. Layton, Dr. C. P. Symonds, and Mr. N. A. Jory. Cases will be shown by Mr. E. A. Peters and Mr. F. C. W. Capps.

Laryngology. 5 P.M. (Cases at 4 P.M.) Cases will be shown.

Anæsthetics. 8.30 P.M. Discussion on Evipan. Dr. R. Jarman, Dr. R. R. Macintosh, and Dr. W. A. Low.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 7th.—8.30 P.M. (De Vere Hotel, Kensington Palace-gardens), Mr. Johnston Abraham: History of Syphilis. Mr. James Kemble: Medical Life of Lord Byron.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.

THURSDAY, Dec. 6th.—5 P.M., Prof. William Wright: Galen on the Eye (Thomas Vicary lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Dec. 3rd to SATURDAY, Dec. 8th.—MEDICAL SOCIETY OF LONDON, Chandos-street, W. Tues., 2.30 P.M., Dr. A. E. Clark-Kennedy: Glycosuria. Wed., 8.30 P.M., Dr. E. C. Warner: Diet of the Nephritic.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Sat., 3 P.M., Dr. B. I. Parsons-Smith: Demonstration of Heart Cases.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Afternoon course in venereal disease.—BRITISH RED CROSS CLINIC, Peto-place, N.W., Course in Rheumatism on Tues. and Thur., at 8.30 P.M.—INFANTS' HOSPITAL, Vincent-square, S.W. Afternoon Course in diseases of infants.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Afternoon course in dermatology. —Courses arranged by the Fellowship are open only to members and associates.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.

FRIDAY, Dec. 7th.—9.45 A.M., Dr. Heald: The Minor Injuries of Work and Sport. 11.30 A.M., Miss Dearnley: A Gynæcological Subject. 2 P.M., Dr. Burrell: Treatment of Pulmonary Cavities. 3 P.M., Mr. Joll: Diagnosis and Treatment of Diseases of Gall Bladder and Bile Ducts. 4.30 P.M., Dr. Morris: Some Aspects of Modern Anæsthesia with reference to Premedication.

SATURDAY.—9.45 A.M., Dr. Haldin-Davis: Treatment of some Common Dermatoses. 11.30 A.M., Prof. Amy Fleming: Antenatal Methods. 2 P.M., Miss Catherine Lewis: Diseases of the Breast. 3 P.M., Miss Ida Mann: Some Recent Advances in Ophthalmology.

SUNDAY.—10 A.M., Dr. Una Ledingham: Regulation of Weight by Diet. Dr. Neill Hobhouse: Nervous Disorders. Dr. Davies: Dyspepsia. This course is open only to former students of the Hospital.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Dec. 3rd.—10 A.M., medical wards, skin clinic. 11 A.M., surgical wards. 2 P.M., surgical wards, gynæcological wards, eye and gynæcological clinics.

TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., throat clinic.

WEDNESDAY.—10 A.M., children's clinic. 2 P.M., medical wards, eye clinic. 3.45 P.M., venereal diseases demonstration.

THURSDAY.—10 A.M., gynæcological and neurological clinics. 11.30 A.M., fracture demonstration. 2 P.M., eye and genito-urinary clinics.

FRIDAY.—10 A.M., skin clinic. Noon, lecture on treatment, 2 P.M., throat clinic.

SATURDAY.—10 A.M., children's and surgical clinics, medical wards.

There will be no lectures at 4.15 this week.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.

THURSDAY, Dec. 6th.—5 P.M., Dr. C. E. Wheeler: Random Reflections chiefly on Materia Medica.

KING'S COLLEGE, Denmark-hill, S.E.

THURSDAY, Dec. 6th.—9 P.M., Mr. T. E. Cawthorne: Nasal Sinusitis.

CHARING CROSS HOSPITAL, W.C.

SUNDAY, Dec. 2nd.—10.30 A.M., Mr. L. R. Broster: Head Injuries. 11.45 A.M., Dr. A. A. W. Petrie: Paranoid States and their Development.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Dec. 3rd.—3.30 P.M., Dr. Symonds: Organic Dementia, Aphasia.

TUESDAY.—3.30 P.M., Dr. Collier: Epilepsy and its Variants.

WEDNESDAY.—3.30 P.M., Dr. Collier: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Riddoch: The Sensory System.

FRIDAY.—3.30 P.M., Dr. Kinnier Wilson: The Motor System.

Out-patient Clinic daily at 2 P.M.

BRITISH INSTITUTE OF RADIOLOGY.

WEDNESDAY, Dec. 5th.—2.30 P.M. (at Central Hall, Westminster), opening of Annual Congress by Sir Humphry Rolleston.

THURSDAY.—10.30 A.M., Physical and Technical Papers. 2.30 P.M., Dr. J. Struthers Fulton: A Therapy Generator Operating Six X Ray Tubes in Parallel. Dr. J. Ralston Paterson: Dosage in Radiation Therapy. Dr. S. Gilbert Scott and Dr. F. Hernaman-Johnson: Constitutional Effect of X Rays as Determined by Blood Tests. 5 P.M., Dr. H. H. Berg: The Digestive Mucosa. (Silvanus Thompson lecture.)

FRIDAY.—10.30 A.M., Dr. A. C. Jordan: Asthma due to Toxæmia—a Radiological Study. Prof. J. Preston Maxwell: Further Studies on Osteomalacia and Fœtal Rickets. Dr. J. Duncan White: Familial Marble Bone. Dr. Russell Reynolds: Cineradiography. 3 P.M., Sir William Bragg, F.R.S.: X Rays and the Coarse Structure of Materials. (Mackenzie Davidson lecture.)

UNIVERSITY OF LONDON.

MONDAY, Dec. 3rd, and FRIDAY.—5 P.M. London School of Hygiene and Tropical Medicine, Keppel-street, W.C., Dr. L. W. Hackett: Malaria in Europe. (Heath Clark lectures.)

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.

WEDNESDAY, Dec. 5th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, Dec. 5th.—3.30 P.M., Mr. Percival Cole: The Cancer Problem: Present Position with regard to Prevention.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.

WEDNESDAY, Dec. 5th.—Dr. Saxby Willis: Types of Pulmonary Tuberculosis.

CENTRAL LONDON EAR, NOSE, AND THROAT HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Dec. 7th.—4 P.M., Mr. C. Gill-Carey: Rhinological Aspects of Asthma.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY, Dec. 5th.—4 P.M., Mr. A. Gough: Pelvic Tumours.

LEEDS GENERAL INFIRMARY.
TUESDAY, Dec. 4th.—3.30 P.M., Dr. Towers: Medical Demonstration.

NEWCASTLE GENERAL HOSPITAL.
SUNDAY, Dec. 2nd.—10.30 A.M., Dr. G. F. Duggan: Surgical Cases.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, AND THROAT.
WEDNESDAY, Dec. 5th.—4.30 P.M., Mr. B. P. Robinson: Clinical Features of Acute Mastoiditis.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Dec. 4th.—4.15 P.M., Dr. E. A. Gerrard: The Contracted Pelvis.
FRIDAY.—4.15 P.M., Dr. W. Brockbank: Demonstration of Medical Cases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Dec. 6th.—4.15 P.M., Mr. E. E. Hughes: Stricture of the Urethra.

GLASGOW POST-GRADUATE ASSOCIATION.
TUESDAY, Dec. 4th.—3.30 P.M. Faculty Hall, Vincent-street, Mr. J. Eric Paterson: Prognosis of Intracranial Tumours.
WEDNESDAY.—4.15 P.M. (Victoria Infirmary), Dr. Ivy McKenzie: Medical Cases.

Appointments

ATTCHISON, H. H., B.M. Oxon., D.O., has been appointed Honorary Ophthalmic Surgeon to the Newcastle-upon-Tyne Eye Hospital.

ANDERSON, J. C., M.B. St. And., F.R.C.S. Eng., Honorary Surgeon to the Children's Hospital, Sheffield.

CARVER, ALFRED, M.D. Camb., D.P.H., D.P.M., Medical Director of the Cassel Hospital for Functional Nervous Disorders, Swaylands, Penshurst.

KEYMS, J., M.D. Irel., D.O.M.S., Honorary Ophthalmic Surgeon to the Free Eye Hospital, Southampton.

MOFFATT, A. B., M.D. Manch., Honorary Assistant Ophthalmic Surgeon to the Free Eye Hospital, Southampton.

STANLEY, BRIAN, M.B., M.R.C.P. Lond., Honorary Assistant Physician to the Hertford County Hospital.

Royal Free Hospital.—The following appointments to the Obstetrical and Gynæcological Unit are announced:—MOORE, J. A. M., M.B. Lond., F.R.C.S. Eng., Senior Assistant; CONSTANTINE, M. C. E., M.D. Lond., Second Assistant; and SHIPPAM, E. M., M.D. Lond., Third Assistant.

Medical Referee under the Workmen's Compensation Act, 1925: R. C. SHAW, M.Sc., F.R.C.S., of Preston, for the Blackpool County Court District (Circuit No. 4).

Certifying Surgeons under the Factory and Workshop Acts: Dr. M. M. MACLEAN (Cambusland District, Lanarkshire); and Dr. N. A. DICKINSON (Crowle District, Lincolnshire).

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, Southwark, S.E.—Hon. Surg. Reg. Also Res. H.S. At rate of £100–£150.
Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.
Bath, Royal Mineral Water Hospital.—Hon. Physician.
Birmingham, Dudley-road Hospital.—Res. Phys. £650.
Blackburn Royal Infirmary.—Res. Cas. O. £150.
Bournemouth County Borough.—Asst. M.O.H. and Asst. Schoo M.O. £500.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Third Asst. for Out-patient Dept.
Chesterfield and North Derbyshire Royal Hospital.—Cas. O. At rate of £200.
City of London Maternity Hospital, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Colchester, Essex County Hospital.—H.S. £175.
Denbighshire County Council.—Asst. M.O. £650.
Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.
Dunedin Hospital, New Zealand.—Res. Surg. O. £500.
Durham County Mental Hospital.—Asst. M.O. £350.
Durham, Seaham Hall Sanatorium, &c.—Jun. Res. M.O. £200.
Eastern Dispensary, Leman-street, E.—Physician.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—H.P. Three H.S.'s. Also Obstet. Asst. Each at rate of £50.
Erith and District Hospital.—Hon. Cons. Orth. Surgeon.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
Exeter City Mental Hospital.—Asst. M.O. £400.
Gloucestershire Royal Infirmary, &c.—Res. H.P. and H.S. Each at rate of £150.
Gordon Hospital, Vauxhall Bridge-road, S.W.—Res. H.S. At rate of £150.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.
Hartlepool, Hartlepools Hospital.—H.S. At rate of £150.
Herefordshire General Hospital.—H.P. At rate of £100. Also H.S. and Cas. O. At rate of £100.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. M.O. for Country Branch. At rate of £250. Also Anæsthetist, 15 gns.
Hull Municipal Maternity Home and Infants' Hospital.—Jun. Res. M.O. At rate of £100.
Hull Royal Infirmary.—Res. Surg. Officer. £200. Also Third H.S. At rate of £150.
Ilford, King George Hospital.—Res. Med. and Surg. O.'s. Each £250. Also Cas. O. At rate of £150. Also H.P. and H.S. Each at rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150.
Kensington Royal Borough.—Asst. M.O.H. and Tuber. O. £750.
Llandrindod Wells Urban District.—M.O.H. £40.
London County Council, Henniker House, Children's Receiving Home, Parson's Green.—M.O. £100.
London Lock Hospital and Home, Harrow-road, W.—Hon. Surgeon.
Maidstone, West Kent General Hospital.—H.P. £150.
Manchester Ear Hospital, Grosvenor-square, All Saints'.—Res. H.S. £120.
Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.
Middlesex County Council.—Dist. M.O. £100. Also Public Vaccinator.
National Temperance Hospital, Hampstead-road, N.W.—Hon. Dental Anæsthetist. Also Cas. O. and H.P. At rate of £120 and £100 respectively.
Newcastle General Hospital.—H.S. At rate of £150.
Northampton General Hospital.—Hon. Asst. Surgeon.
Nuneaton, Caldecote Hall.—Med. Supt. £400.
Preston and County of Lancaster Royal Infirmary.—Spec. H.S. Also H.S. to Cons. Surg. Each at rate of £150.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—H.S. At rate of £125.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £100.
Queen Mary's Hospital for the East End, E.—Res. M.O. and Cas. O. At rate of £200 and £150 respectively. Also H.S.'s and H.P., Obstet. H.S. Also Res. Anæsthetist and H.P. Each at rate of £120.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.
Royal Eye Hospital, St. George's-circus, S.E.—Hon. Asst. Surgeon.
Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Also Res. Cas. O. At rate of £150. Also Med. Reg. and Gynæc. Reg. Each at rate of £100. Also First H.P. and Second H.S.
Royal London Ophthalmic Hospital, City-road, E.C.—Out-patient Officer. £100.
Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250. Physician Surgeon. Also Ophth. Surgeon.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70. Also Second Ophth. Surgeon.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Clin. Asst.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £180.
St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Ophth. Surg.
Salford Royal Hospital.—Res. Surg. O. £200. Also H.P. and H.S. Each at rate of £125.
Sheffield, Jessop Hospital for Women.—H.S. to Maternity Dept. Also H.S. At rate of £120 and £100 respectively.
Shoreham-by-Sea, Southlands Hospital.—Second Asst. M.O. £300.
Swindon Borough.—Deputy M.O.H. and Asst. School M.O. £600.
Taunton and Somerset Hospital.—H.S. At rate of £100.
Tilbury Hospital.—Med. Supt. £200.
Watford and District Peace Memorial Hospital.—H.P. At rate of £150.
West London Hospital, Hammersmith, W.—H.P., two H.S.'s. Res. Anæsthetist. Each at rate of £100. Also Res. Asst. Surgeon. £200.
Wigan, Royal Albert Edward Infirmary, &c.—H.S. At rate of £150.
Winchester, Royal Hampshire County Hospital.—Res. Surg. O. At rate of £200.
Windsor, King Edward VII. Hospital.—Res. M.O. £200. Also Three H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Carlisle, Cumberland; Eye, Suffolk; and Barrhead, Renfrewshire.

Births, Marriages, and Deaths

DEATHS

GOODALL.—On Nov. 22nd, at Riverscourt, Brundall, Norfolk, Joseph Strickland Goodall, M.B. Lond., F.R.C.S. Edin., late of Harley-street, W.

STURRIDGE.—On Nov. 25th, at The Willesden General Hospital, Peter Frederick Sturridge, M.R.C.S., late of Kendal and Sutton Benger, aged 75 years.

VAN DER BEKEN.—On Nov. 22nd, at a nursing-home, H. Van der Beken, M.R.C.S., of St. John's, Shoreham-by-Sea.

WILDEY.—On Nov. 20th, at Hitchincroft, Churt, Surrey, Surgeon Rear-Admiral Alexander Gascoigne Wildey, C.B., late Royal Navy, in his 75th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.